

EXTERNAL INHIBITION OF ETHANOL TOLERANCE

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By
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Abstract

According to a conditioning analysis of tolerance, pharmacological conditional responses (CRs) contribute to tolerance. It has previously been reported that, as expected on the basis of this model, tolerance to the hypothermic effect of ethanol is attenuated by "external inhibition," i.e., by the presentation of a novel stimulus (a strobe light). However, results of more recent research indicate that novel stimuli augment the hypothermic effect of ethanol in rats receiving the drug for the first time. It is possible, therefore, that a novel stimulus apparently attenuates ethanol tolerance because it augments ethanol-hypothermia, rather than because it functions as an external inhibitor. Results presented in this thesis confirm reports that ethanol-induced hypothermia is augmented by a novel stimulus, thus prior demonstrations of external inhibition of ethanol tolerance is equivocal. Further experiments in this thesis evaluated external inhibition tolerance to another effect of ethanol -- ataxia. Although the initial ataxic effect of ethanol (unlike the hypothermic effect) is not enhanced by a novel stimulus (a strobe light/white noise combination), the stimulus reinstated ethanol-induced ataxia in tolerant rats. Tolerance was also disrupted by the novel omission of the strobe/noise stimulus. Thus, experiments in this thesis demonstrate external inhibition of ethanol tolerance in a preparation not confounded by the effects of the novel stimulus on initial responding to ethanol. Experiments reported in this thesis also demonstrate that tolerance to the ataxic effect of ethanol is mediated by a compensatory CR, termed "hypertaxia." The compensatory CR was disrupted by the novel addition and novel omission of the strobe/noise stimulus providing converging evidence that the attenuation of tolerance by a novel stimulus results from external inhibition of Pavlovian conditioning. Finally, external inhibition of ethanol tolerance was not evident when there was a long delay between tolerance development sessions and testing. These data are consistent with an associative analysis of tolerance which suggests that contextual control of tolerance should be minimized as the interval between training and testing is increased.

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Preface

This thesis includes unpublished material, published material (Siegel & Larson, 1996) and material submitted for publication (Larson & Siegel, submitted). Because the articles have multiple authors, my contribution to each is explained here.

Chapter 2 includes one unpublished experiment which is relevant to this thesis.

Chapter 3 (Siegel and Larson, 1996) includes two experiments. Experiment 2 represents my contribution to the paper and thus is relevant to this thesis.

Chapter 4 (Larson and Siegel, submitted to Pharmacology, Biochemistry and Behavior) includes three experiments. All three experiments represent my contribution to the paper and thus are all relevant for this thesis.

Appendix A-F includes the raw data compiled for the experiments relevant to this thesis.

CHAPTER 1

Introduction

Ethanol

Ethanol, the psychoactive agent in alcoholic beverages consumed by people, produces a wide range of effects in humans and other animal species. For example, ethanol induces behavioral impairment and can affect thermoregulation, metabolism, blood circulation, and blood pressure (Pohorecky & Brick, 1990). The induction of behavioral impairment and alteration of thermoregulation by ethanol have often been used as measures of ethanol's effects in experimentation and are of particular import for this thesis.

Ethanol and Thermoregulation

Ethanol affects thermoregulation and, hence, can alter body temperature. The effect of ethanol on body temperature depends upon the ambient temperature. It has been demonstrated that at room temperature (e.g., 21° C) ethanol administered to a rat will induce hypothermia, but in very warm environments (e.g., 39° C) ethanol induces hyperthermia (Myers, 1981). This differential effect of ethanol on body temperature, dependent upon ambient temperature, indicates that ethanol does not alter the thermoregulated set point of the animal. Instead, poikilothermia (a body temperature change to match ambient temperature) results when ethanol is administered. Since ethanol is most often administered in room temperature environments, the poikilothermic effect of

ethanol is often expressed as hypothermia (e.g., Kim, Pinel, Dalal, Kippin, Kalynchuk, & Payne, 1995; Siegel & Sdao-Jarvie, 1986). Hypothermia induced by ethanol is responsible for neurochemical changes in many species. Alteration of metabolism and central nervous system functioning after ethanol is administered result from ethanol-induced hypothermia (Pohorecky & Brick, 1990).

Ethanol and Behavioral Functioning

Another widely used marker of the effect of ethanol is an impairment of behavioral functioning. Dose dependent behavioral impairment, or ataxia, can reliably be demonstrated in many species after the administration of ethanol (Wallgren & Barry, 1970). Behavioral impairment is evident in humans who stagger after drinking heavily (Dews, 1962) and is also noticeable in rats injected with ethanol (Wallgren & Barry, 1970). One of the simplest ways to measure the behavioral impairing effect of ethanol in rats is to assess the righting reflex. Rats will very quickly right themselves (i.e., turn over) when placed on their back or side. If ethanol is administered prior to a righting reflex test, rats will be delayed in righting themselves, and (depending on their blood ethanol concentration) may fail to do so entirely (Arvola, Sammalisto & Wallgren, 1958). In addition to the righting reflex test, many other methods are used to measure the behavioral impairing effect of ethanol. In many cases, subjects are trained to make a desired response prior to ethanol treatment. The extent to which ethanol disrupts this response indexes ethanol-induced behavioral impairment (e.g., Bitrán & Kalant, 1991; Lê & Israel, 1994; Mansfield, Benedict, & Woods, 1983). It is beyond the scope of this presentation to review all of these procedures. Importantly, ethanol consistently induces impairment of

behavioral functioning when first administered and this effect is often used as a dependent measure in studies of ethanol and ethanol tolerance.

Tolerance

Tolerance is defined as behavioral and biological decreases in sensitivity to a drug as a function of drug administration. Both acute and chronic tolerance have been the subject of extensive investigation (Maickel & Nash, 1986; Ramsay & Woods, 1997). Acute tolerance, first observed by Mellanby (1919), develops within a single exposure to a drug. It is said to occur when the physiological concentration of a drug is the same during Time₁ and Time₂, but the observed drug effect is more apparent in Time₁ than Time₂. While acute tolerance develops within a single drug session, chronic tolerance occurs after repeated drug administrations. Chronic tolerance is said to have occurred after repeated administration of a drug when more of the drug is necessary to produce the original effect. This change represents a shift to the right of the dose response curve. The development of tolerance is sensitive to many variables, including the drug dose, duration of drug administration and the drug effect being measured (Lê, 1990).

Understanding tolerance is considered by many to be important for understanding drug dependence (eg., Tiffany & Baker, 1986) as drug dependence and tolerance are thought of as part of the same continuum. Drug dependence is defined as "adaptive biological changes induced by chronic drug exposure that are reflected in various behavioral and physiological responses expressed upon the removal of the drug (i.e., withdrawal)" (Pohorecky & Brick, 1990, p. 245). Because a decreasing drug effect occurs with increasing drug presentations (tolerance), greater quantities of the drug are

necessary to obtain the initial drug effect. Escalating drug doses are then consumed. This chronic drug exposure can result in drug dependence. Given the negative social and economic impact of drug dependence, tolerance research which attempts to understand these phenomena has important social implications.

Tolerance has historically been considered to be a physiological adaptation to the presence of a drug (for a review, see Jaffe, 1990). Much research has investigated tolerance as a reduced concentration of drugs at their sites of action or changes in receptor functioning as a result of drug administrations. For example, it has been suggested that the down regulation of opioid receptors is important for morphine tolerance (Law, Hom & Loh, 1984). This has been termed functional tolerance and represents a reduced sensitivity of target tissues, often in the central nervous system (Lê, 1990). Dispositional tolerance has also been described. Dispositional tolerance results from a change in metabolic functioning as a result of drug administrations (Lê, 1990). For example, liver metabolism in rats is enhanced by 30-50% after multiple ethanol treatments (Lieber, 1983; Lieber & DeCarli, 1972). Because of enhanced ethanol metabolism, ethanol is less likely to reach its full pharmacological effect reflecting the development of tolerance.

Research over the last few decades has demonstrated that tolerance is a very complex process involving more than a physiological adaptation to a drug. In addition to the physiological mechanisms of tolerance, associative factors play a role in drug tolerance. It has been demonstrated that tolerance can be affected by drug-associated cues and the contribution of these cues is emphasized in a Pavlovian conditioning analysis of drug tolerance.

Tolerance and Pavlovian Conditioning

Pavlovian Conditioning

Pavlovian, or classical, conditioning reflects the development of an association between two stimuli (Tarpy, 1997). More specifically, during Pavlovian conditioning an association between a neutral stimulus and a biologically relevant stimulus is learned. At the outset of conditioning, the biologically relevant stimulus elicits a reflexive response. Because the properties of the biologically relevant stimulus and the reflexive response do not depend upon prior training they are termed the unconditional stimulus (UCS) and unconditional response (UCR). During Pavlovian conditioning, a neutral stimulus is paired with the UCS. After repeated pairings of the neutral stimulus and the UCS, the neutral stimulus will elicit a response. Because the properties of the neutral stimulus and the response it elicits are conditional upon prior training, they are termed the conditional stimulus (CS) and the conditional response (CR). The CR is evidence that an association has been learned between the CS and the UCS. Pavlovian conditioning was first demonstrated with anticipatory salivation. Pavlov paired the presentation of a tone (CS) with food (UCS) presentations to dogs. The food elicited salivation at the outset of conditioning and, after some tone - food pairings, salivation was elicited by the tone.

The acquisition of CS-UCS associations is a fundamental principle of Pavlovian conditioning. There are multiple stimulus arrangements, many quite complex, which are also part of Pavlovian conditioning. These stimulus arrangements reflect the importance of stimulus pairings for learned associations (for a more in depth discussion, see Mackintosh, 1974).

Pavlovian Conditioning Analysis of Tolerance. The Pavlovian conditioning analysis of tolerance, first described over 20 years ago, emphasizes the importance of drug associated cues in the development and expression of tolerance. It does so by equating drug administration with a Pavlovian conditioning learning trial. According to the Pavlovian conditioning analysis of tolerance, tolerance is mediated by responses made to cues which signal a drug presentation (Siegel, 1975).

In initial conceptualization of this model, the drug administration was equated with the unconditional stimulus (UCS) and the initial drug-induced disturbance with the unconditional response (UCR). Drug-associated cues which reliably predict the oncoming drug were equated with the conditional stimuli (CSs). Many pairings of the drug-associated cues (CSs) with the drug administration (UCS) result in a learned association and, therefore, a conditional response (CR) (for a review, see Siegel, 1989). In many instances, the CR is compensatory, or opposite, to the drug effect. The compensatory CR assists in the restoration of homeostasis to the organism and is thought to mediate the development of tolerance (Poulos & Cappell, 1991). For example, a CR of hyperthermia elicited by the drug associated cues will counteract ethanol-induced hypothermia and mediate the development of tolerance.

Problematic to the compensatory conditioning account of tolerance is that not all CRs are compensatory; in some cases, drug-similar CRs are noted (e.g., Eikelboom & Stewart, 1979). To account for the fact that CRs sometimes mimic the drug effect and are sometimes opposite the drug effect, a number of theories (e.g., Eikelboom & Stewart, 1982; Ramsay & Woods, 1997) have postulated that the UCR is not the observed drug

effect. Instead, it has been suggested that the drug effect is the UCS and the UCR is the response the organism makes to the drug effect the first time it is administered. Some such responses are designed to restore homeostasis in the organism and may be drug opposite or compensatory, however, these responses are not necessarily compensatory. If the initial drug administration elicits a drug-opposite UCR, a compensatory CR would be expected. If the initial drug administration does not elicit a drug opposite UCR, no compensatory CR would be expected. Thus, in all instances the CR observed after tolerance development is parallel to the UCR (the response the organism makes to the initial drug effect). The revision of the Pavlovian conditioning analysis of tolerance, while leaving the spirit of the Pavlovian conditioning analysis of tolerance intact, provides a much clearer conceptualization of the role of drug-opposite responses in tolerance.

The relevance of Pavlovian conditioning for drug tolerance has been demonstrated in many ways, including the environmental specificity test. To demonstrate environmental specificity of tolerance, subjects are made tolerant to a drug in a distinct drug-predictive environment (CS). Typically, a placebo is given in an alternative environment. Once tolerance development has taken place, a tolerance test will occur in the placebo environment. The placebo environment, not normally associated with the drug, will not elicit a CR and a disruption of tolerance will be observed. Environmental specificity of tolerance has been demonstrated many times, using many different drugs (e.g., Melchior & Tabakoff, 1981; Poulos & Hinson, 1984; Siegel & MacRae, 1984). In addition to demonstrations of environmental specificity of tolerance, tolerance is affected by many nonpharmacological manipulations which affect learning. For instance, tolerance is

sensitive to extinction (Siegel, 1987), latent inhibition (Tiffany & Baker, 1981), and sensory preconditioning (Dafters, Hetherington & McCartney, 1983), among other learning phenomena (for a review, see Siegel, 1989). Much support has accumulated for the Pavlovian conditioning analysis of tolerance, demonstrating the importance of drug associated cues for tolerance.

External inhibition of tolerance. Included among demonstrations that learning is important in drug tolerance is evidence of external inhibition of tolerance (Poulos, Hunt & Cappell, 1988; Siegel & Larson, 1996). Many years ago Pavlov (1927) described external inhibition as the disruption of a CR by a novel stimulus. Pavlov noted that during conditioning experiments,

"the dog and the experimenter would be isolated in the experimental room, all the conditions remaining for awhile constant. Suddenly, some disturbing factor would arise -- a sound would penetrate the room; some quick change in illumination would occur; or a draught would get in underneath the door, and maybe bring some odor with it. If any of these extra stimuli happened to be introduced just at the time of application of the conditioned stimulus, it would inevitably bring about a more or less pronounced weakening or even complete disappearance of the reflex response depending on the strength of the extra stimulus" (Pavlov, 1927, p. 44).

According to the Pavlovian conditioning analysis of tolerance a novel stimulus should disrupt a CR mediating tolerance, much like a novel stimulus disrupted the CR in Pavlov's studies.

In support of the Pavlovian conditioning analysis of tolerance, Siegel and Sdao-Jarvie (1986) reported that tolerance to the hypothermic effect of ethanol in rats could be externally inhibited by a novel strobe light. Siegel and Sdao-Jarvie (1986) postulated that

the novel stimulus disrupted a compensatory CR mediating tolerance, thus, accounting for the augmented hypothermia. Although Siegel and Sdao-Jarvie explained their findings as evidence of external inhibition of tolerance, Cunningham and colleagues provided an alternative interpretation (Cunningham & Bischof, 1987; Peris & Cunningham, 1986).

They demonstrated that a variety of stressful stimuli, including a strobe light (Cunningham & Bischof, 1987), will enhance ethanol-induced hypothermia in rats receiving ethanol for the first time. [Cunningham & Bischof (1987) offered an endorphinergic interpretation of these results, suggesting that increased release of endogenous opiates which cause stress-related hyperthermia also causes the enhanced hypothermia in the stressed animals.]

Given Cunningham and Bischof's (1987) findings, it is possible that the effect of the strobe light on ethanol tolerant rats (Siegel & Sdao-Jarvie, 1986) may be due to the hypothermia-augmenting effect of the novel stimulus, rather than to external inhibition of the CR hypothesized to mediate tolerance. Because the Siegel and Sdao-Jarvie (1986) experiment did not include a group tested with the strobe light on the first occasion that they received ethanol, they cannot rule out this possibility. The attenuation of tolerance they report could have resulted from a hypothermia enhancing effect of a stressor, rather than from the disruption of a CR. Thus, Siegel and Sdao-Jarvie's (1986) results do not provide an unequivocal demonstration of external inhibition of ethanol tolerance.

The experiments in this thesis were designed to evaluate external inhibition of ethanol tolerance while accounting for the nonassociative effect of a stressor reported by Cunningham and colleagues (Cunningham & Bischof, 1987; Peris & Cunningham, 1986). Because Cunningham and Bischof (1987) raise questions about the validity of Siegel and

Sdao-Jarvie's (1986) finding of external inhibition of tolerance, the first experiment was an attempt to replicate the Cunningham finding. The nonassociative enhancement of ethanol-induced hypothermia by a strobe light was investigated in ethanol-naive rats. Remaining experiments in this thesis used a different measure of ethanol's effects, ataxia, to evaluate the disruption of ethanol tolerance by a novel stimulus.

CHAPTER 2

The purpose of this study was to assess the reliability of previous reports that a novel strobe light will enhance ethanol-induced hypothermia in ethanol-naive rats. This experiment was designed to be similar to the experiment conducted by Cunningham and Bischof (1987) who first reported this effect.

Method

Subjects. The subjects were 24, male, Sprague Dawley rats (Charles River, Quebec) weighing 275 - 300 g at arrival in the colony. They were housed individually in stainless steel cages with food and water freely available.

Prior to beginning the study, a biotelemetry device designed to measure body temperature in freely moving rats was implanted into the intraperitoneal cavity of each rat (model M, from Mini Mitter Co., Sunriver, Oregon). The transmitter contained a 12 x 19 mm capsule weighing approximately 2.3 g. Temperature data was obtained with a Dataquest III system.

Experimental Chambers. Data were collected from 3 rats at a time, in a room distinct from the colony. All the animals were transported from their home cages into the experimental chambers. In the experimental chambers they were placed in clear plastic cages (25 x 25 x 13 cm high) with a wire mesh lid.

Novel Stimulus. The novel stimulus was a strobe light (GrassPS2 photostimulator)

positioned 10 cm above each temperature assessment cage. The photostimulator used a Xenon flash tube to generate 10 microsecond flashes, set at a flash rate of 4 Hz at maximum intensity.

Injections. Ethanol was injected at a dose of 1.8 g/kg. Ethanol injections were made from 95 per cent ethanol diluted in physiological saline to form a 10 per cent solution. Saline injections were equated volumetrically with ethanol injections. All injections were given intraperitoneally (I. P.).

Procedure

Transmitters were implanted while rats were anaesthetized with pentobarbital. Five days after implantation subjects were acclimatized to the experimental chambers. At 48-hour intervals they were removed from their home cage in the colony and placed in the experimental chambers for 5 habituation sessions. The first 2 habituation sessions were 60 minutes long. Following that, sessions were 180 minutes long.

After habituation to the experimental setting, subjects participated in the experiment for four, 180-minute sessions. Sessions occurred at 48-hour intervals. Each subject was injected with ethanol for two consecutive sessions. Injections occurred 60 minutes after being placed in the experimental chambers. Saline was injected consecutively during the other two remaining experimental sessions. Half of the rats received their ethanol treatment before their saline treatment, with the order being reversed for the remaining subjects.

During one of the two exposures with each substance, subjects were left undisturbed for the two hours post injection (no strobe). During the other exposure the

strobe light was presented (strobe). The strobe was presented for a five minute interval 20-minutes post injection. Further presentations occurred in 20 minute cycles of strobe on (5 minutes)-strobe off (15 minutes). Half of the subjects receiving each of the two orders of drug presentation received the strobe session before the no strobe session, with the order being reversed for remaining subjects.

Results and Discussion

Figure 1 shows the mean post-injection body temperature for each of the four treatment conditions (collapsed across all days) during the two-hour post-injection period. Hyperthermia was present following the injection of saline, and hypothermia was present following the injection of ethanol. Although the strobe light had little effect on the hyperthermia experienced when treated with saline, it enhanced ethanol-induced hypothermia.

Insert Figure 1 about here

A mixed-design ANOVA was conducted on the data depicted in Figure 1. The ANOVA included the following factors: order (ethanol followed by saline, saline followed by ethanol), drug (ethanol or saline), strobe condition (strobe or no strobe) and 10-minute sample means. There was no main effect of order, nor was there any significant interactions with the order variable. There was a significant effect of drug, $F(1,22)=90$, $p<.001$, and sample periods, $F(11,242)=14.8$, $p<.001$. In addition, there was a significant interaction of drug x sample periods, $F(11,242)=16.5$, $p<.001$, indicating that the thermic

effect of ethanol and saline differed. There was also a significant interaction of strobe condition x drug, $F(1,22)=5.1$, $p<.04$ indicating that the strobe had different effects on subjects when injected with saline and ethanol. Further one-way analyses indicated that the strobe had no effect when subjects were treated with saline, but significantly augmented hypothermia when subjects were treated with ethanol, $F(2,22)=7.1$, $p<.02$.

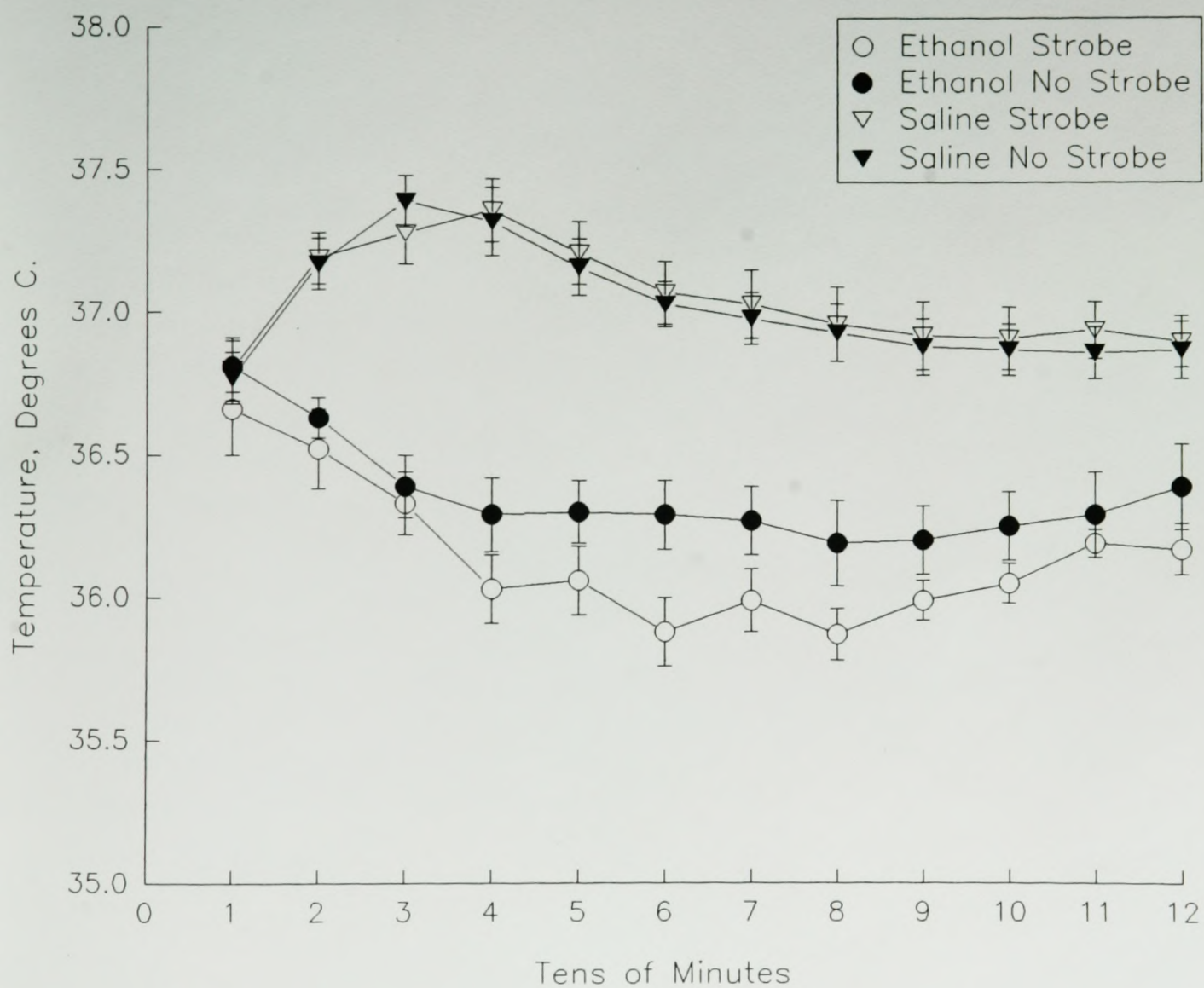
Siegel and Sdao-Jarvie (1986) reported that tolerance to the hypothermic effect of ethanol is disrupted by the presentation of a novel strobe light and they interpreted these results as support for the conditioning analysis of tolerance. They suggested that drug opposite CRs which contribute to tolerance were attenuated by the presentation of a novel stimulus. In other words, ethanol was subject to external inhibition of tolerance.

Cunningham and Bischof (1987), however, demonstrated that ethanol-naive rats presented with a novel strobe light in conjunction with ethanol were more hypothermic than those not presented with the strobe light. The results of the present experiment confirm those findings. In light of these findings, the previous report that tolerance to ethanol's hypothermic effect is attenuated by a strobe light (Siegel & Sdao-Jarvie, 1986) does not unequivocally demonstrate external inhibition of ethanol tolerance. Therefore, future studies of external inhibition of tolerance need to evaluate the nonassociative effect of a novel stimulus on the drug effect. Given the nonassociative complication in studying external inhibition of tolerance to ethanol's hypothermic effect, further studies of external inhibition of ethanol tolerance would benefit from using another dependent measure to measure the development of tolerance. Thus, additional studies investigated external inhibition of tolerance to ethanol's ataxic effect.

Figure Caption

Figure 1. Mean post-injection body temperatures for each of the four treatment conditions (Ethanol/Strobe; Ethanol/No Strobe; Saline/Strobe; Saline/No Strobe).

Figure 1.



CHAPTER 3

Siegel, S., & Larson, S. J. (1996). Disruption of tolerance to the ataxic effect of ethanol by an extraneous stimulus. *Pharmacology, Biochemistry and Behavior*, 55, 125-130. (Reprinted with permission of Elsevier Science Inc.)



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Disruption of Tolerance to the Ataxic Effect of Ethanol by an Extraneous Stimulus

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SIEGEL, S. AND S. J. LARSON. *Disruption of tolerance to the ataxic effect of ethanol by an extraneous stimulus*. PHARMACOL BIOCHEM BEHAV 55(1) 125-130, 1996.—According to a conditioning analysis, pharmacological conditional responses (CRs) contribute to tolerance. We previously reported (24) that, as expected on the basis of this model, tolerance to the hypothermic effect of ethanol is attenuated by "external inhibition," (for instance, by presentation of a novel stimulus (a strobe). However, results of more recent research (2,12,13) indicate that novel stimuli augment the hypothermic effect of ethanol in rats receiving the drug for the first time. It is possible, therefore, that a novel stimulus apparently attenuates ethanol tolerance because it augments ethanol-hypothermia, rather than because it functions as an external inhibitor. Two experiments were designed to evaluate external inhibition of tolerance to another effect of ethanol—ataxia. Although the initial ataxic effect of the drug (unlike the hypothermic effect) is not enhanced by a novel stimulus, the stimulus reinstated ethanol-induced ataxia in tolerant rats. The results demonstrate external inhibition of ethanol tolerance in a preparation not confounded by the effects of the novel stimulus on initial responding to ethanol.

Alcohol tolerance Conditioning Ethanol tolerance External inhibition

RESULTS of many experiments indicate that drug tolerance is modulated by drug-associated cues present at the time of tolerance testing [reviewed in (20)]. The contribution of such cues has been incorporated in a Pavlovian conditioning analysis of tolerance (16,20). According to this analysis, tolerance is mediated not only by homeostatic corrections elicited by the presence of the drug, but also by homeostatic corrections made in response to cues that have signaled the drug in the past. These pharmacological conditional responses (CRs), elicited by predrug stimuli, attenuate the response to the drug.

The conditioning account of tolerance is supported by the results of experiments indicating that nonpharmacological manipulations of the hypothesized conditional stimulus (CS), drug-predictive cues, similarly affect both tolerance and conditioning. Thus tolerance, like conditioning, is subject to extinction, CS preexposure effects, partial reinforcement effects, sensory preconditioning, inhibitory learning, overshadowing, and blocking (20). Results of many experiments indicate that conditioning contributes to tolerance to a variety of drugs, including ethanol (6,19). Of special relevance to the present experiments is Siegel and Sdao-Jarvie's (24) demonstration that tolerance to the hypothermic effect of ethanol is attenuated by presentation of a novel extraneous stimulus (a strobe light). This would be expected, on the basis of the conditioning analysis, because established CRs are attenuated by presenta-

tion of a novel stimulus—a phenomenon Pavlov termed "external inhibition" (11).

Although Siegel and Sdao-Jarvie (24) explained their findings as evidence of Pavlovian external inhibition of the CR mediating tolerance to the hypothermic effect of ethanol, Cunningham and colleagues (2,12,13) suggested an alternative interpretation. They reported that a variety of stressful stimuli increase the hypothermic response to ethanol; rats receiving ethanol for the first time display a more pronounced hypothermia if they are stressed in conjunction with ethanol administration. [The mechanism of this effect is not yet clear, but an endorphinergic interpretation has been presented (2,12,13)]. It is possible, then, that a strobe may attenuate ethanol tolerance because of the hypothermia-augmenting effect of the stress induced by this novel stimulus, rather than to external inhibition of the CR hypothesized to mediate tolerance. In fact, Cunningham and Bischof (2) reported that a strobe presentation is one of the stressors that is effective in enhancing ethanol-induced hypothermia.

The present experiment was designed to evaluate further the disruption of ethanol tolerance by a novel stimulus. Inasmuch as the analysis of hypothermic tolerance may be complicated by the unconditional effect of a novel stimulus on the hypothermic effect of ethanol, a different measure of the effect of ethanol, ataxia, was used. As was the case in the Siegel and

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Sdao-Jarvic (24) experiment, the effect of a novel stimulus was evaluated in rats tolerant to ethanol. In addition, as was the case with Cunningham and colleagues, the effect of the extraneous stimulus was also evaluated in nontolerant rats to determine whether it unconditionally affects the response to the drug.

EXPERIMENT I

Method

Subjects, Drugs, and Apparatus. Thirty-two, experimentally-naïve, male, Sprague-Dawley-derived rats (weighing 250–275 g at the start of the experiment) were maintained in individual cages with food and water freely available.

The effect of ethanol was assessed with a tilting plane (1,5,7,28). The apparatus consists of an alley, 60 cm long \times 18 cm wide, constructed of Plexiglas. It is enclosed by walls 30 cm high, and open at the top. The alley is hinged at one end. The other end can be elevated by the operation of crank (one complete revolution of the crank elevates the apparatus approximately 2°). A protractor built into the hinged end of the apparatus provides an indication of the angle of inclination. The ataxic effect of ethanol was measured by an experimenter who gradually turned the crank (elevating the alley approximately 4°/s) and noted the angle of inclination at which the rat started slipping down the alley (slip angle).

All injections were IP. Ethanol, injected at a dose of 2 g/kg, was prepared as a 20% solution (by volume) of 95% ethanol in physiological saline. This dose of ethanol is similar to that used by Cunningham and colleagues (1.8 g/kg) in their studies demonstrating that novel stimuli augment the hypothermic effect of ethanol (2), and is at the lower end of the range of parenterally administered ethanol doses previously used in evaluations of ataxic effect of ethanol using the tilting plane [e.g., (7), see review (28), pp. 367–371]. Physiological saline injections were equated volumetrically with ethanol injections.

The novel stimulus used during test consisted of simultaneous presentation of a strobe light and white noise. The strobe light was generated by a Grass PS2 photostimulator. This photostimulator uses a Xenon flash tube to generate 10 microsecond flashes. It was set at a flash rate of 4 Hz at maximum intensity (139,350 lx). Moderate intensity white noise, delivered through a ceiling speaker, was presented at the same time as the strobe stimulation. During periods of strobe/noise presentation overhead room lights were turned off.

Procedures. Two groups of subjects ($n/\text{group} = 16$) differed with respect to the substance injected on each daily session—either ethanol or saline. For each session, subjects were taken from their home cage in the colony room to the room containing the tilt apparatus. Within 2 min of transport, they received a preinjection slip-angle assessment. They then were injected, and slip angle was again determined at 2-min intervals for 14 min.

The experiment consisted of 24 daily sessions. Day 1 was the pretolerance test day. Half the rats injected with each substance were presented with the strobe/noise stimulus. The stimulus was initiated 90 s after injection and continued throughout the remainder of the session.

Days 2–23 consisted of tolerance development sessions. The single preinjection and the seven postinjection determinations of slip angle were made for each of the ethanol and saline subjects on each session. The strobe/noise stimulus was not presented on any of these 22 sessions.

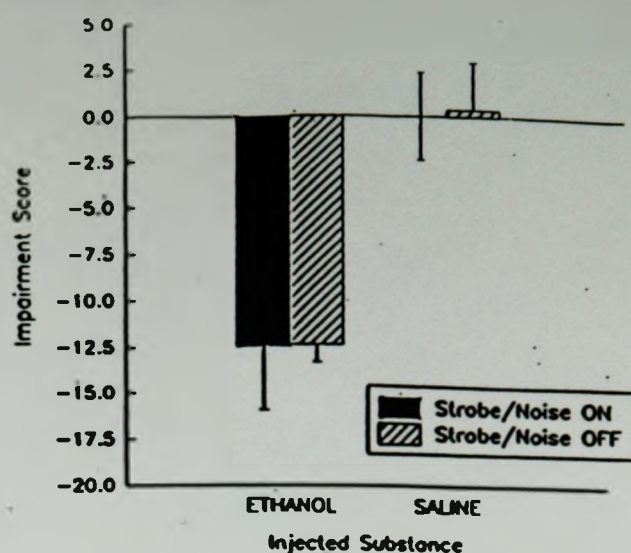


FIG. 1. Mean impairment scores (± 1 SEM) displayed by ethanol- and saline-injected rats that were and were not presented with the strobe/noise on the pretolerance test (Experiment 1).

Day 24 was the posttolerance test session. As was the case with the pretolerance test session, half the rats injected with each substance were presented with the strobe/noise stimulus starting 90 s after injection, with the stimulus continuing until the final postinjection determination of slip angle. Half the ethanol- and saline-injected rats presented with this stimulus on the posttolerance test session were not presented with it on the pretolerance test session.

Data Treatment. A measure of impairment was computed for each subject for each session. This was the difference, in degrees, between the smallest slip angle noted during postinjection determinations and that subject's preinjection slip angle for that session [see (5,7)]. Thus, increasing ataxia is indexed by increasingly negative impairment scores.

Results and Discussion

The pretolerance test session was conducted on the first day of the experiment. As expected, the preinjection slip angles (obtained prior to differential treatment) were similar for ethanol- and saline-injected subjects that were and were not presented with the strobe/noise stimulus on this test session (mean preinjection slip angles: ethanol-strobe = 39°, ethanol-no strobe = 35°, saline-strobe = 36°, saline-no strobe = 37°). A 2×2 ANOVA of this preinjection data indicated no significant main effects or interactions, all $F_s(1, 28) \leq 1.7$, all $p_s \leq 0.20$. Figure 1 depicts the mean impairment scores (± 1 SEM) displayed by ethanol- and saline-injected subjects that were and were not presented with the strobe/noise stimulus on this pretolerance test session. The ataxic effect of ethanol was apparent. Ethanol-injected rats showed greater impairment scores than saline-injected rats. The extraneous stimulus, however, did not augment impairment scores. That is, in contrast with the hypothermic effect of ethanol, the ataxic effect of ethanol is not augmented by a novel stimulus in nontolerant rats. These observations were supported by the results of an ANOVA of the data summarized in Fig. 1. The only significant effect was due to the injected substance, $F(1, 28) = 26.0$, $p < 0.001$.

DISRUPTION OF ETHANOL TOLERANCE

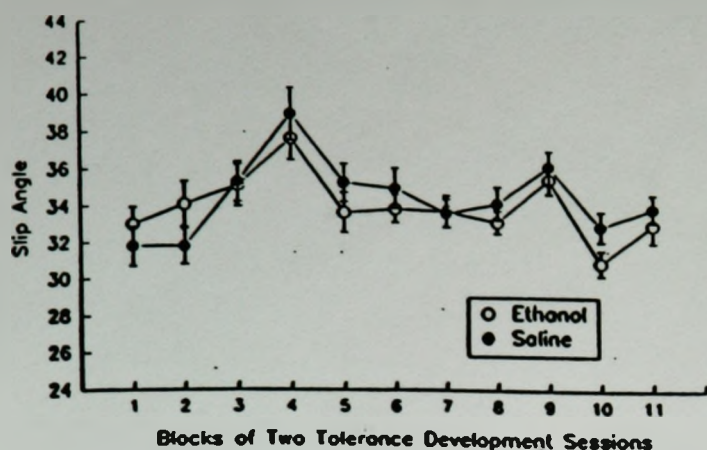


FIG. 2. Mean preinjection slip angles (± 1 SEM) for ethanol- and saline-injected rats over two-session blocks during tolerance development (Experiment 1).

Figure 2 depicts the mean preinjection slip angles (determined prior to injection) over two-session blocks during the tolerance development phase of the experiment (days 2–23). As can be seen in Fig. 2, these preinjection angles displayed session-to-session variability, but were similar for ethanol and saline rats. A mixed design ANOVA of the data summarized in Fig. 2 indicated that neither the drug injected subsequent to the preinjection determination, nor the interaction between drug and session, was significant, $F(1, 30) < 1$ and $F(10, 300) = 1.3$, respectively, $ps > 0.20$.

Figure 3 depicts the mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects, over two-session blocks, during the tolerance development phase of the experiment. Over the course of repeated injections there was little change in impairment scores for saline subjects, but the impairment initially displayed by ethanol subjects gradually decreased. A mixed-design ANOVA of the data summarized in Fig. 3 indicated a significant session block \times group interaction, $F(10, 300) = 5.48$, $p < 0.001$. Subsequent one-way repeated measures ANOVAs indicated that the effect of session blocks was statistically significant for ethanol subjects, $F(10, 150) = 7.10$,

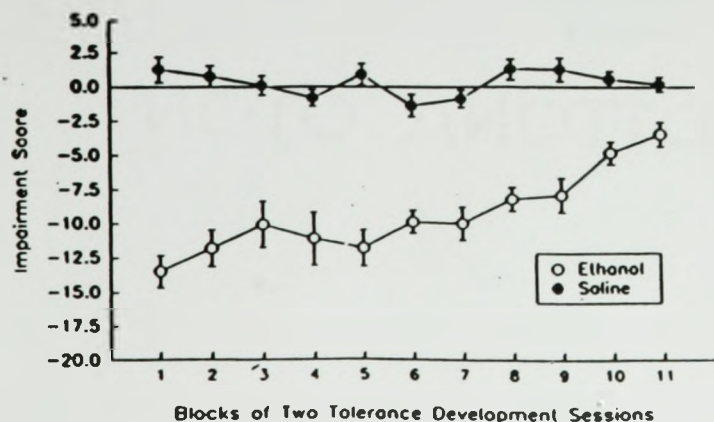


FIG. 3. Mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects, over two-session blocks, during tolerance development (Experiment 1).

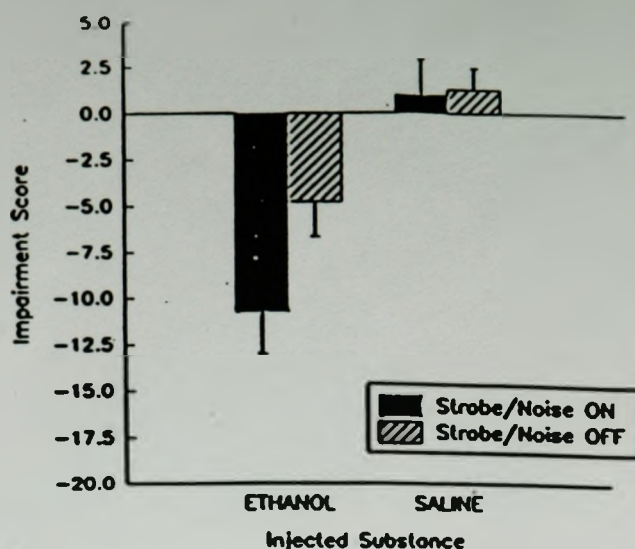


FIG. 4. Mean impairment scores (± 1 SEM) displayed by ethanol- and saline-injected rats that were and were not presented with the strobe/noise on the posttolerance test (Experiment 1).

$p < 0.001$, but not for saline subjects, $F(10, 150) = 1.67$, $p > 0.09$.

The results of the posttolerance test are summarized in Fig. 4, which depicts the mean impairment scores (± 1 SEM) of ethanol- and saline-group rats that were and were not presented with the strobe/noise stimulus. Again, these impairment scores were calculated as differences from preinjection tilt angles that were similar for the groups (mean preinjection slip angles for the four groups ranged from 32° to 34° , with differences not approaching statistical significance). An ANOVA of the data summarized in Fig. 4 indicated a significant drug (ethanol vs. saline) \times strobe/noise status (on vs. off) interaction, $F(1, 28) = 5.91$, $p < 0.02$. Ethanol subjects presented with the strobe/noise displayed significantly greater impairment than ethanol subjects not presented with this stimulus, $t(14) = 2.90$, $p < 0.02$. No such effect of strobe/noise presentation was seen in saline rats, $t(14) < 1$.

The results of this experiment suggest that tolerance to the ataxic effect of ethanol is subject to external inhibition; a novel cue augmented the ataxic effect of ethanol in tolerant, but not nontolerant rats. However, rats displaying apparent external inhibition of ethanol tolerance had experience with both the drug and the tilting plane apparatus prior to the final test session. Although the noise/strobe augmented the hypothermic response to the final administration of ethanol, and not the initial administration, it is conceivable that the strobe would augment the response to an initial administration of the drug in rats that were experienced in the tilting-plane apparatus. This possibility was evaluated in Experiment 2.

EXPERIMENT 2

One group of rats was treated as the ethanol group in Experiment 1 (i.e., they were injected with ethanol on each of 24 days, with the effect of the strobe/noise assessed on pre- and posttolerance test sessions). A second group of rats was treated as the saline group in Experiment 1, except that they were injected with ethanol, for the first time, on the posttolerance test session. Thus, for the final test session, rats in both

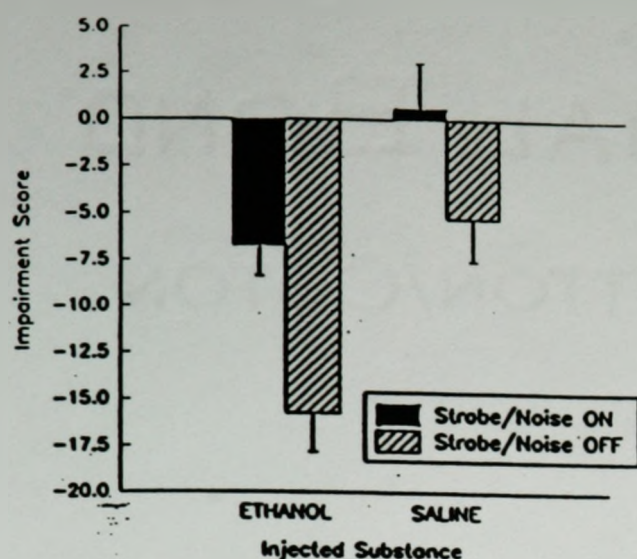


FIG. 5. Mean impairment scores (± 1 SEM) displayed by ethanol- and saline-injected rats that were, and were not, presented with the strobe/noise on the pretolerance test (Experiment 2).

groups were injected with ethanol, and both had extensive experience with the tilting-plane assessment.

Method

The subjects were 32 male rats of the same strain and weight range as those used in Experiment 1. The procedure was identical to Experiment 1, except for modifications during the posttolerance testing (day 24). Unlike Experiment 1, all animals were given ethanol during posttolerance test. Half of the saline and ethanol animals were given the strobe/noise stimulus during the posttolerance test (as in Experiment 1), and the other half were not.

Results and Discussion

Impairment scores in this experiment, as in the previous experiment, were calculated as differences from preinjection slip angles. Preinjection angles in this experiment were similar to those obtained in the previous experiment, and did not differ significantly between groups in any comparisons.

The pretolerance test session was conducted on the first day of the experiment. Figure 5 displays the mean impairment scores (± 1 SEM) displayed by ethanol- and saline-injected rats that were and were not presented with the strobe/noise during this test session. Again, the ataxic effect of ethanol was apparent; ethanol-injected rats displayed greater impairment scores than did saline-injected rats. There was no evidence that the novel stimulus enhanced the ataxic effect of ethanol. Indeed, as may be seen in Fig. 5, in this experiment the strobe/noise actually decreased ataxia; rats in both groups tested with the strobe/noise combination exhibited less impairment than those tested without the stimuli. These findings were confirmed by an ANOVA that revealed a significant effect of drug (ethanol vs. saline), $F(1, 28) = 17.3, p < 0.001$, and strobe/noise presentation (on vs. off), $F(1, 28) = 11.9, p < 0.002$. This contrasts with the results of the previous experiment in which the strobe had no significant effect on ethanol-induced ataxia. Although the reason for the difference is unclear, it should be emphasized that the direction of the effect

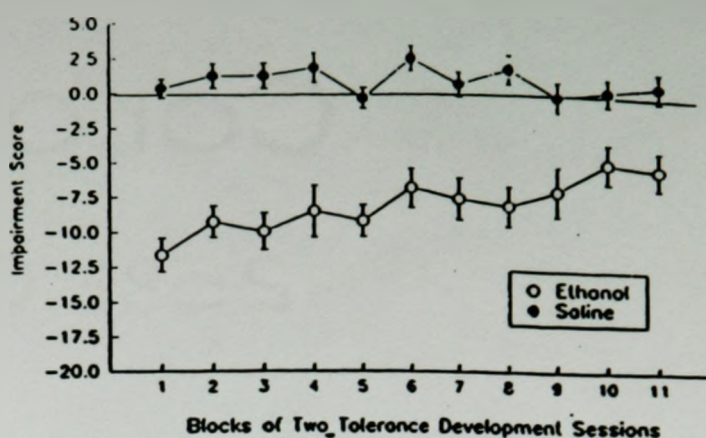


FIG. 6. Mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects, over two-session blocks, during tolerance development (Experiment 2).

in the present experiment (unconditional attenuation of the ataxic effect of ethanol) is opposite in direction to findings that would support a nonassociative interpretation of the external inhibition effect.

Figure 6 depicts the mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects, over two-session blocks, during the tolerance development phase of the experiment (days 2-23). The ataxic effect of ethanol and the development of tolerance to this effect is apparent. A mixed-design ANOVA of the data summarized in Fig. 6 indicated a significant session block \times group interaction, $F(10, 300) = 2.80, p < 0.01$. Subsequent one-way repeated measures ANOVAs indicated that the effect of session blocks was statistically significant for ethanol subjects, $F(10, 150) = 3.63, p < 0.001$, but not for saline subjects, $F(10, 150) = 1.27, p > 0.20$.

For the posttolerance test, all rats were injected with ethanol. The results of this test are summarized in Fig. 7, which depicts the mean impairment scores (± 1 SEM) of ethanol- and saline-group rats that were and were not presented with the strobe/noise stimulus. The effect of the strobe/noise on ethanol-group rats, which received their 24th injection of the drug on this test day, was similar to that seen in the previous experiment. That is, the extraneous stimulus enhanced the ataxic effect of the drug in these ethanol-tolerant rats, $t(14) = 2.25, p < 0.05$. In contrast, there was no evidence that the strobe/noise affected ataxia in saline-group rats, which received their first injection of ethanol on this posttolerance test, $t(14) < 1$. Thus, in the present experiment, as in the prior experiment, the strobe/noise increased ethanol ataxia in ethanol-tolerant rats. It did not increase ataxia in rats receiving ethanol for the first time (even if they were experienced with the ataxia-assessment situation).

GENERAL DISCUSSION

The results of these experiments, demonstrating disruption of tolerance to the ataxic effect of ethanol by an extraneous stimulus, are similar to previous findings concerning disruption of tolerance to the hypothermic effect of ethanol by such a stimulus (24). The hypothermic tolerance findings, however, have been subjected to alternative interpretations. Siegel and Sdao-Jarvie suggested that their findings "are parallel to Pavlov's observation of external inhibition of an established C.R." and thus, "are consistent with the conditioning account of

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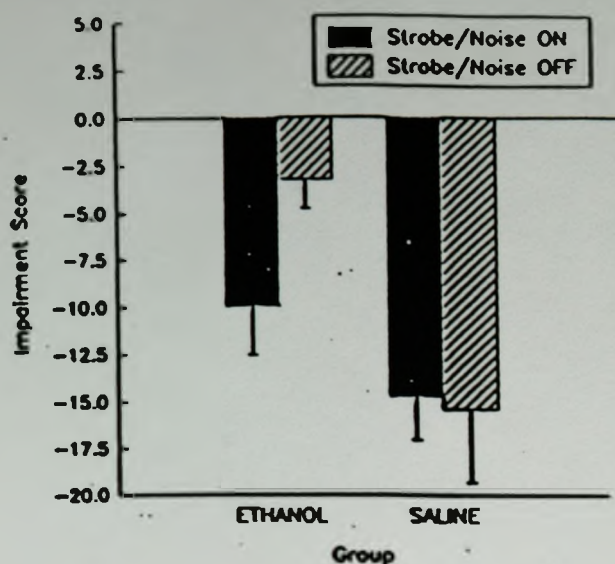


FIG. 7. Mean impairment scores (± 1 SEM) displayed by ethanol-injected rats that were, and were not, presented with the strobe/noise on the posttolerance test (Experiment 2). Saline-group rats received ethanol for the first time on this test; ethanol-group rats received ethanol throughout the experiment.

ethanol tolerance" [(24), p. 261]. However, Cunningham and colleagues (2,12,13) reported that the novel stimulus (in common with a variety of stressors) augments the hypothermic effect of ethanol independently of whether or not the subject is tolerant to the drug; thus, Siegel and Sdao-Jarvie's results do not unambiguously demonstrate external inhibition of tolerance.

Although the nonassociative interpretation of the Siegel and Sdao-Jarvie (24) findings is relevant to putative demonstrations of external inhibition of tolerance to ethanol hypothermia, it is not readily applicable to the results of the present experiments. In these experiments we demonstrate that a novel stimulus that does not unconditionally augment a behavioral effect of ethanol, nevertheless, disrupts the display of tolerance to this effect. Thus, the results of these experiments demonstrate external inhibition of ethanol tolerance in a preparation not confounded by novel stimuli-induced enhancement of initial responding to ethanol.

In experiments concerning external inhibition of ethanol tolerance, extraneous environmental stimuli have been used to disrupt tolerance. Results of an experiment by Poulos et al. (15), concerning external inhibition of morphine tolerance, demonstrate that extraneous pharmacological stimuli may be used to disrupt tolerance. In this experiment, ethanol was used as a stimulus to disrupt tolerance to the opiate. During the tolerance acquisition phase of this experiment, two groups of rats were repeatedly injected with morphine and became tolerant to the drug's analgesic effect. One of these groups was additionally injected with ethanol 15-min after each morphine injection. Following tolerance acquisition, all rats were tested for morphine analgesic tolerance with a novel state being introduced following morphine administration, for instance, they experienced either the novel introduction, or the novel omission, of the alcohol cue. Both novel states attenuated tolerance.

Results of this Poulos et al. (15) experiment provide further evidence of external inhibition of tolerance in a preparation

not subject to the nonassociative interpretation offered by Cunningham and colleagues. In the Poulos et al. (15) experiment, there was no evidence that postmorphine ethanol augmented the analgesic effect of the opiate in rats receiving the drugs for the first time. Nevertheless, ethanol was an effective external inhibitor of morphine-analgesic tolerance. Indeed, in the case of rats receiving ethanol following each tolerance-acquisition morphine administration, the absence of the usual ethanol disrupted tolerance. It would seem that the phenomenon of external-inhibition of tolerance is not dependent on the use of an external inhibitor that augments the effect of the drug, or that is stressful.

In the present experiments, ethanol was administered once per day, with distinctive environmental cues associated with each administration. These administration procedures favor both the development of ethanol-anticipatory CRs [see (6,19)], and associative tolerance [e.g., (25)]. Thus, in the present report [and elsewhere, (15,20,24)] disruption of tolerance by an extraneous stimulus has been seen as evidence of external inhibition of the CR that mediates tolerance. However, it is conceivable that the effect of the novel cue is unrelated to conditioning. That is, the cue may unconditionally interfere with nonassociative activities that mediate tolerance [(11), pp. 43-44]. Although there is nothing in the results of these experiments that rules out such an interpretation, there is reason to believe it implausible. Disruption of CRs by novel cues is a general phenomenon, and thus, on the basis of a conditioning interpretation, it is not surprising that a novel cue disrupts tolerance to several drugs (ethanol and morphine). In contrast, a nonassociative explanation would have to postulate that the cue [or the novel omission of a cue, (10)] interferes with a variety of different, unconditionally elicited homeostatic mechanisms to explain the effect of the cue on the display of tolerance to several pharmacologically distinct drugs.

The results of the present experiments are consistent with a Pavlovian conditioning analysis of tolerance. There are other ways in which learning may contribute to tolerance [see (6,19)]. For example, Dews (3) suggested that the frequently drugged subject may acquire a behavioral strategy that compensates for some drug-induced impairments. Dews' example clearly illustrates the operation of such an instrumentally acquired ability to cope with the effects of ethanol: the experienced drinker is more proficient in remaining erect than the inexperienced drinker because the experienced drinker has instrumentally acquired a behavioral strategy (a broad-based gait) that compensates for the effect of ethanol because he has practiced this behavior while intoxicated. In the present experiment, rats assessed on the tilting plane after ethanol administration may have learned to make postural adjustments that caused them to resist slipping as the assessment apparatus was tilted. The relationship between such instrumental conditioning and classical conditioning accounts of tolerance has been a matter of considerable discussion [e.g., (6,14,17)]. Instrumental conditioning, like Pavlovian conditioning, is disrupted by external inhibition [e.g., (4,29,30)]; thus, demonstrations that a novel stimulus disrupts tolerance to the ataxic effect of ethanol is consistent with an instrumental conditioning analysis of such tolerance, as well as a Pavlovian conditioning analysis.

Regardless of the mechanism by which external cues interfere with tolerance, the phenomenon has important implications. As suggested by Poulos et al. (15), external inhibition of tolerance may be relevant to some instances of exaggerated drug toxicity. That is, in the tolerant subject the effect of a drug may be unexpectedly large if it is presented in conjunction with an extraneous stimulus. It has been demonstrated that the

conditioning analysis of tolerance is relevant to understanding overdoses from a variety of drugs, including opiates (18,21-23), pentobarbital (27), and ethanol [(9,10); but see (26)]. It is possible that some instances of overdose may result because an extraneous stimulus intrudes into the usual drug administration ritual, thus disrupting the expression of tolerance. Indeed, Siegel (20) described such a scenario occurring in the case of an enigmatic overdose suffered by a heroin addict. It also is possible that external inhibition of tolerance has foren-

sic implications. For example, the individual apparently tolerant to alcohol may suddenly fail to display such tolerance when a novel stimulus occurs, such as the arrival of police (8).

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CHAPTER 4

Learning and Tolerance to the Ataxic Effect of Ethanol

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Running Head: Learning and Ethanol Tolerance

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It has been well documented that drug associated cues are important for the development and expression of drug tolerance. The Pavlovian conditioning analysis of tolerance emphasizes the importance of drug associated cues in tolerance by equating a drug administration with a learning trial. According to the conditioning analysis of tolerance, tolerance should be subject to external inhibition, the disruption of a conditional response by a novel stimulus. We previously reported that tolerance to the ataxic effect of ethanol was attenuated by a novel strobe/noise presentation (31). It was hypothesized that the novel strobe/noise stimulus disrupted a Pavlovian conditional response (CR) mediating tolerance. In this paper we report evidence of a compensatory CR in ethanol-tolerant rats tested on the tilting plane. Both the compensatory CR and tolerance was disrupted by the presentation of a novel strobe/noise stimulus providing converging evidence that the attenuation of tolerance by a novel stimulus results from external inhibition of Pavlovian conditioning. The disruption of both ethanol tolerance and the CR mediating tolerance were also apparent when the novel omission of the strobe/noise stimulus was used as the external inhibitor in rats made tolerant to ethanol with the strobe/noise stimulus on. Finally, we have shown that the disruptive effect of a novel stimulus on ethanol tolerance is decreased when there is a 10-day delay between the final tolerance development session and testing demonstrating that the interval between training and testing is important when assessing associative tolerance.

Tolerance, a decrease in sensitivity to a drug over repeated administrations, can be affected by drug-associated cues. The contribution of drug-associated cues to tolerance is emphasized in a Pavlovian conditioning analysis of drug tolerance (reviewed in 28). Using the usual conditioning terminology, cues accompanying the primary drug effect function as conditional stimuli (CSs). The direct effect of the drug constitutes the unconditional stimulus (UCS). Prior to any learning, this pharmacological stimulation elicits responses that compensate for the drug-induced disturbances (20). These responses that compensate for the drug effect are unconditional responses (UCRs). After some pairings of the pre-drug CS and pharmacological UCS, a drug-compensatory response is elicited as a conditional response (CR).¹ These drug compensatory CRs mediate the development of tolerance by counteracting the drug effect (24).

In many experiments demonstrating the role of conditioning in drug tolerance, the importance of drug associated cues is assessed in the absence of the CS. By testing subjects for drug tolerance with no CS present, no CR should be elicited. The absence of a compensatory CR attenuates tolerance because responses elicited in anticipation of the drug which cancel out the drug effect are not elicited. Tests of tolerance in the absence of drug associated cues have demonstrated the importance of Pavlovian conditioning in the expression of tolerance (e. g., 24). Further research has shown that tolerance is subject to such Pavlovian conditioning manipulations as extinction (27), latent inhibition (25, 33), sensory pre-conditioning (3), as well as many others (for a review, see 28). In addition, external inhibition, or the disruption of a CR by a novel stimulus (16), has been used to assess the robustness of the conditioning analysis of tolerance (31, 32).

Evidence of external inhibition of tolerance was first presented by Siegel and Sdao-Jarvie (32). They demonstrated that a novel strobe light would attenuate tolerance to the hypothermic effect of ethanol. Their demonstration of external inhibition of tolerance was taken as support for the conditioning analysis of tolerance. Shortly after Siegel and Sdao-Jarvie (32) reported external inhibition of tolerance, Cunningham and colleagues (2, 17) demonstrated that a variety of stressful stimuli, including a strobe light, would enhance ethanol-induced hypothermia in rats receiving ethanol for the first time. This nonassociative enhancement of hypothermia provided an alternative explanation for Siegel and Sdao-Jarvie's (32) findings. Because Siegel and Sdao-Jarvie did not test a drug naive group with the strobe light in their experiment, it is possible that the attenuation of tolerance they report could have resulted from a hypothermia enhancing effect of the strobe light, rather than from the disruption of an hypothesized CR. Thus, Siegel and Sdao-Jarvie's (32) results do not provide an unequivocal demonstration of external inhibition of ethanol tolerance.

Recently, Siegel and Larson (31) investigated external inhibition of ethanol tolerance in a preparation not confounded by the nonassociative effect of the stimulus. They studied external inhibition of tolerance to the ataxic effect of ethanol. Siegel and Larson (31) found that a novel strobe light/white noise combination disrupted tolerance to the ataxic effect of ethanol by augmenting ethanol-induced ataxia. Importantly, no augmentation of ataxia resulted when rats were presented with a novel stimulus during their first ethanol administration. Since the novel stimulus did not enhance ethanol-induced ataxia in the absence of tolerance, Siegel and Larson (31) concluded that tolerance

to the ataxic effect of ethanol is subject to external inhibition. They speculated that the disruption of tolerance by a novel stimulus resulted from a disruption of a compensatory CR mediating ethanol tolerance; however, no investigation of a CR was made to support this speculation.

The first experiment in the present series was designed to assess whether the disruption of tolerance to the ataxic effect of ethanol by a novel stimulus resulted from the disruption of a CR. Evidence that a novel stimulus disrupts a CR mediating tolerance would provide additional evidence that the disruption of tolerance by a novel stimulus is, in fact, external inhibition of tolerance. In Experiment 1, a placebo was given to ethanol-tolerant rats in a drug-predictive environment. A compensatory CR -- "hypertaxia," or enhanced behavioral functioning -- was expected. It was also predicted that both ethanol tolerance and the CR mediating tolerance would be disrupted by the presentation of a novel stimulus.

General Methods

Subjects

Subjects were male Sprague Dawley rats, weighing 275-335 g at the start of experimentation. Rats were housed in pairs in clear plastic cages with wood chips on the floor. They were on a 12 hour dark:light cycle (lights on at 7:00 am). All experimental sessions occurred during the light portion of the cycle. Food and water were available ad lib..

Experimental Setting and Apparatus

All experimental sessions occurred in a 3 m x 2.7 m room distinct from the colony.

The experimental room was lit with overhead fluorescent lighting, unless otherwise noted. Subjects were assessed for ataxia using a tilting plane (1, 31). The tilting plane consisted of an alley, constructed from Plexiglass, 60 cm long x 18 cm wide x 30 cm high. The alley was open at the top and hinged at one end. A crank and pulley system was operated to raise the unhinged end of the alley. Inclination occurred at about 2° for one rotation of the handle. A protractor built into the hinged end of the alley provided an indication of the angle of inclination when the plane was tilted.

Injected Substances

Injected substances were either 1.5 g/kg of ethanol or physiological saline. Ethanol injections were made from 95 per cent ethanol diluted in saline to form a 15 per cent solution. Control rats were injected with physiological saline equated volumetrically with ethanol. All injections were given intraperitoneally.

Extraneous Stimulus

The extraneous stimulus consisted of a strobe light and white noise presented simultaneously. The strobe light was generated by a Grass Photostimulator (Model PS2). The photostimulator uses a Xenon flash tube to generate 10 microsecond flashes. It was set at a flash rate of 4 Hz at maximum intensity. The photostimulator was placed at ceiling height, approximately 2 meters from the tilting plane. Moderate level white noise was generated by an overhead room speaker. When the strobe/noise combination was presented the overhead room lights were off and a red light was turned on.

Experimental Sessions

At the start of experimental session, rats were placed singly in plastic cages

(identical to their home cage) and transported to the experimental room where they remained for the duration of the session. Within 2 minutes of transport to the experimental setting an initial pre-injection slip angle was taken for each animal. Slip angle was measured by the experimenter, who, after placing the rat in the alley, turned the crank and noted the angle of inclination at which the rat began to slip down. Rats were injected with the appropriate solution within 2 minutes of the first slip angle assessment. After the injection, slip angle was measured every 2 minutes for 7 additional slip angle assessments. Within two minutes of the final slip angle assessment, subjects were returned to the colony and placed in their home cage.

Data Treatment

A measure of maximum impairment was computed for each subject for each session by taking the difference, in degrees, between the smallest post-injection slip angle and that subject's pre-injection slip angle for that session (31). Thus, increasing ataxia is indexed as increasingly negative impairment scores ².

Data were analyzed using Analysis of Variance (ANOVA) and planned comparisons were conducted using an F test. A significance level of $p < .05$ was used for all statistical tests.

Experiment 1

As stated above, the purpose of this experiment was to test for a compensatory CR in rats tolerant to the ataxic effect of ethanol. During the CR (placebo) test, some subjects were presented with a novel stimulus to assess the effect of novelty on conditional responding. In addition, to replicate findings reported by Siegel and Larson (31) a

tolerance test was conducted to assess the effect of a novel stimulus on tolerance.

Procedure

Tolerance Development

During tolerance development subjects were injected with ethanol (Group ETH, n=20) or saline (Group SAL, n=20) during daily experimental sessions. The tolerance development phase of the experiment lasted for 22 consecutive days.

CR Test

On day 23 all rats were injected with saline for test of conditional responding. Half of the rats from both Group ETH and Group SAL were presented with the novel strobe light/white noise stimulus (ETH/ON, n=10; SAL/ON, n=10). The stimulus was turned on within 90 seconds of injections and remained on for the duration of the experimental session. Remaining rats from both Group ETH and Group SAL were not presented with the novel stimulus (ETH/OFF, n=10; SAL/OFF, n=10). The test environment for these subjects was identical to their tolerance development environment.

Tolerance Reacquisition

Reacquisition of tolerance occurred for 4 days following the test for conditional responding (days 24-27). During these sessions rats were run according to their tolerance development schedule -- subjects from Group ETH were injected with ethanol and subjects Group SAL were injected with saline during daily experimental sessions.

Tolerance Test

On day 28 all rats were injected with ethanol in the tolerance test. Half of the rats from both Group ETH and Group SAL were presented with the novel strobe/noise

stimulus (ETH/ON, n=10; SAL/ON, n=10). Once again, the stimulus was turned on within 90 seconds of injections and remained on for the remainder of the experimental session. Remaining rats from both Group ETH and Group SAL were not presented with the novel stimulus (ETH/OFF, n=10; SAL/OFF, n=10). All of the subjects presented with the novel stimulus during the test for conditional responding were not presented with it during the tolerance test.

Results and Discussion

Pre-Injection Slip Angles

Figure 1 depicts the mean pre-injection slip angles (determined prior to injection) for Group ETH and Group SAL subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 1 about here

As can be seen in Figure 1, pre-injection slip angles displayed session-to-session variability, but were similar for Group ETH [mean: 38.42] and Group SAL [mean: 40.59]. A mixed-design ANOVA of the data summarized in Figure 1 indicated that there was no significant effect of tolerance development solution (ETH vs. SAL) injected subsequent to the pre-injection determination. There was, however, a significant tolerance development solution x block interaction, $F(10,380)=2.07$, $p<.05$.

Tolerance Development

Figure 2 depicts the mean impairment scores for Group ETH and Group SAL

subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 2 about here

The ataxic effect of ethanol was present -- Group ETH subjects showed greater impairment than Group SAL subjects. Over the course of the tolerance development sessions, Group ETH subjects displayed increasingly less impairment while there was little change in impairment for Group SAL subjects. A mixed-design ANOVA conducted on the data summarized in Figure 2 indicated a significant tolerance development solution (ETH vs. SAL) x block interaction, $F(10,380)=3.08$, $p<.001$. Further one-way repeated measures analyses indicated a significant block effect for Group ETH, $F(1,190)=6.09$, $p<.001$, but not for Group SAL.

CR Test

In the test for conditional responding all rats were injected with saline. Positive impairment scores were expected in rats experiencing a CR, reflecting hypertaxia, or an enhanced ability to stay on the tilting plane. Figure 3 depicts the mean impairment scores of Group ETH and Group SAL subjects that either were presented or were not presented with the novel stimulus.

Insert Figure 3 about here

As can be seen in Figure 3, Group ETH/OFF subjects had larger positive impairment

scores than all other groups. Group ETH/ON subjects had impairment scores similar to both saline groups. A one-way ANOVA conducted on the data summarized in Figure 3 was significant, $F(3,36)=9.66$, $p<.001$. A planned comparison of Group ETH/ON vs. Group ETH/OFF was significant, $F(1,36)=13.09$, $p<.001$. There was no effect when comparing Group SAL/ON vs. Group SAL/OFF. These findings reflect that rats tolerant to the ataxic effect of ethanol exhibit a compensatory CR when tested with a placebo in the presence of ethanol-associated cues. This finding confirms that tolerance to ethanol-induced ataxia is mediated by conditioning. The CR was disrupted by the novel stimulus since no CR was observed in ethanol-tolerant subjects tested with it.

Tolerance Reacquisition

During the 2 2-session tolerance reacquisition blocks impairment of Group ETH and Group SAL subjects did not differ from block 11 of tolerance development [means: Group ETH, block 11: -5.2, Reacquisition (Reacq.) 1: -5.65, Reacq. 2: -4.78; Group SAL, block 11: -0.5, Reacq. 1: -0.52, Reacq. 2: -0.00]. A mixed-design ANOVA conducted on these data indicated a significant effect of tolerance development solution (ETH vs. SAL), $F(1,38)=63.60$, $p<.001$, but no other effects were significant.

Tolerance Test

In the tolerance test all subjects were injected with ethanol. Figure 4 depicts the mean impairment scores of Group ETH and Group SAL subjects that either were presented or were not presented with the novel stimulus.

Insert Figure 4 about here

As can be seen in Figure 4, ethanol-experienced subjects presented with the novel stimulus (ETH/ON) were more impaired than ethanol-experienced subjects not presented with the novel stimulus (ETH/OFF). Group SAL subjects, receiving ethanol for the first time, were similarly impaired whether they were presented or were not presented with the stimulus. A one-way ANOVA conducted on the data summarized in Figure 4 was significant, $F(3,36)=12.86$, $p<.001$. A planned comparison of Group ETH/ON vs. Group ETH/OFF was significant, $F(1,36)=25.59$, $p<.001$. There was no effect when comparing Group SAL/ON vs. Group SAL/OFF. These analyses demonstrate that external inhibition of ethanol tolerance was apparent. The novel stimulus reinstated impairment at pre-tolerance levels in ethanol-experienced rats while having no effect on saline-experienced subjects receiving ethanol for the first time. Because the stimulus did not enhance ethanol-induced impairment in the ethanol-naive rats, the disruption of tolerance by a novel stimulus did not result from a nonassociative enhancement of impairment by the novel stimulus (2).

Experiment 2

In Experiment 1 we investigated the effect of a novel stimulus on ethanol tolerance and on the CR mediating tolerance. We found that the addition of a novel cue attenuated both tolerance and conditional responding. Just as the addition of a novel stimulus can disrupt tolerance, the novel omission of a cue should also disrupt tolerance. In fact, this was shown in an experiment concerning external inhibition of morphine tolerance (19). In this experiment, two groups of rats were made tolerant to the analgesic effect morphine. One of these groups received a small injection of ethanol 15 minutes after the morphine

injection. External inhibition of tolerance was investigated either by the introduction of a novel post-morphine ethanol cue or by the novel omission of the usual post-morphine ethanol cue. Both novel conditions attenuated tolerance. This experiment provided compelling evidence of external inhibition of tolerance. Based on the Poulos et al. (19) finding, we predict that the novel omission of a cue should disrupt ethanol tolerance and this prediction was assessed in Experiment 2.

Experiment 2 was similar to Experiment 1 except that tolerance development sessions were conducted with the strobe light/white noise stimulus on. On test days, the omission of the strobe light/white noise was used as the external inhibitor. It was predicted that the novel omission of this cue would disrupt ethanol tolerance and the CR mediating tolerance.

Procedure

Pre-Tolerance Test

Day 1 of the experiment was a pre-tolerance test. Two groups of rats (n=20/group) received different injected substances -- either ethanol or saline -- during the pre-tolerance test. Half of the rats injected with each substance were presented with the strobe light/white noise and remaining rats were not. This test was included to ensure that subjects from both Group ETH and Group SAL that either were presented or were not presented with the stimulus on the first day of the experiment were similarly impaired.

Tolerance Development

During tolerance development (days 2-23) subjects were injected with either ethanol (Group ETH, n=20) or saline (Group SAL, n=20) during daily experimental

sessions. Subjects were injected with the same substance during tolerance development sessions as they were during the pre-tolerance test. During tolerance development sessions the strobe/noise stimulus was presented to all rats.

Tolerance Test

On day 24 all rats were injected with ethanol in the tolerance test. Half of the rats from both Group ETH and Group SAL were presented with the stimulus (drug predictive environment) in this test (ETH/ON, n=10; SAL/ON, n=10). Remaining rats, tested with the novel omission of the stimulus, were not presented with it (ETH/OFF, n=10; SAL/OFF, n=10). The strobe/noise stimulus was turned off within 90 seconds of injections and remained off for the duration of the experimental session. Half of the Group ETH and Group SAL subjects tested with the strobe/noise stimulus during this test were previously tested with it during the pre-tolerance test and half were not.

Tolerance Reacquisition

Reacquisition of tolerance occurred for 4 days following the tolerance test (days 25-28). During these sessions rats were run according to their tolerance development schedule -- subjects from Group ETH were injected with ethanol and subjects from Group SAL were injected with saline during daily experimental sessions. All tolerance reacquisition sessions occurred with the strobe/noise stimulus on.

CR Test

On day 29 all rats were injected with saline in a test of conditional responding. Half of the rats from both Group ETH and Group SAL were presented with the strobe/noise stimulus (ETH/ON, n=10; SAL/ON, n=10). Remaining subjects were tested

with the novel omission of the strobe/noise stimulus (ETH/OFF, n=10; SAL/OFF, n=10).

The strobe/noise stimulus was turned off within 90 seconds of injections and remained off for the duration of the experimental session. All subjects presented with the stimulus during the tolerance test were not presented with it during the test of conditional responding.

Results and Discussion

Pre-Tolerance Test

Figure 5 depicts the mean impairment scores for Group ETH and Group SAL subjects that either were presented or were not presented with the strobe/noise stimulus during the pre-tolerance test.

Insert Figure 5 about here

The ataxic effect of ethanol was present -- Group ETH subjects showed greater impairment than Group SAL subjects. The impairment of both Group ETH and Group SAL subjects was not augmented by the presentation of the strobe/noise stimulus. A one-way ANOVA of the data summarized in Figure 5 was significant, $F(3,36)=36.40$, $p<.001$. No planned comparisons (Group ETH/ON vs. Group ETH/OFF or Group SAL/ON vs. Group SAL/OFF) were significant. There was, however, a significant effect of injected solution when comparing Group ETH vs. Group SAL ignoring the stimulus presentation, $F(1,38)=110.87$, $p<.001$. This test demonstrated that the novel stimulus did not enhance impairment in either the ethanol- or saline-injected subjects but that ethanol-injected

subjects were more impaired than saline-injected subjects.

Pre-Injection Slip Angles

Figure 6 depicts the mean pre-injection slip angles (determined prior to injection) for Group ETH and Group SAL subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 6 about here

As can be seen in Figure 6, these pre-injection slip angles displayed little session-to-session variability and were similar for Group ETH [mean: 45.41] and Group SAL [mean: 46.40]. A mixed-design ANOVA conducted on the data summarized in Figure 6 indicated no significant effects.

Tolerance Development

Figure 7 depicts the mean impairment scores for Group ETH and Group SAL subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 7 about here

The ataxic effect of ethanol was present -- Group ETH subjects showed greater impairment than Group SAL subjects. Over the course of tolerance development sessions, Group ETH subjects displayed increasingly less impairment while there was little change in impairment for Group SAL subjects. A mixed-design ANOVA conducted on the data

summarized in Figure 7 indicated a significant tolerance development solution (ETH vs. SAL) x block interaction, $F(10,380)=8.10$, $p<.001$. Further one-way repeated measures analyses indicated a significant effect of block for Group ETH, $F(10,190)=16.71$, $p<.001$, but not for Group SAL.

Tolerance Test

In the tolerance test all subjects were injected with ethanol. Recall that the novel cue was the omission of the strobe light/white noise stimulus. Figure 8 depicts the mean impairment scores for Group ETH and Group SAL subjects that either were presented or were not presented with the stimulus.

Insert Figure 8 about here

As can be seen in Figure 8, ethanol-experienced subjects tested with the novel omission of the stimulus (ETH/OFF) were more impaired than ethanol-experienced subjects tested with the stimulus (ETH/ON). Group SAL subjects, receiving ethanol for the first time, were similarly impaired whether the stimulus was on or off. A one-way ANOVA of the data summarized in Figure 8 was significant, $F(3,36)=22.30$, $p<.001$. A planned comparison of Group ETH/ON vs. Group ETH/OFF was significant, $F(1,36)=16.08$, $p<.001$. There was no effect when comparing Group SAL/ON vs. Group SAL/OFF. External inhibition of tolerance was apparent -- Group ETH subjects tested with the novel omission of the strobe/noise stimulus were more impaired than Group ETH subjects tested with the stimulus (drug predictive environment). The novel omission of the stimulus had

no effect on subjects from Group SAL receiving ethanol for the first time.

Tolerance Reacquisition

During the 2 2-session tolerance reacquisition blocks impairment of Group ETH and Group SAL subjects did not differ from block 11 of tolerance development [means: Group ETH, block 11: -4.17, Reacq. 1: -3.55, Reacq. 2: -3.47; Group SAL, block 11: -0.2, Reacq. 1: -0.58, Reacq. 2: -0.5]. A mixed-design ANOVA conducted on these data indicated a significant effect of tolerance development solution (ETH vs. SAL), $F(1,38)=64.21$, $p<.001$, but no other effects were significant.

CR Test

In the test of conditional responding all rats were injected with saline. Recall that positive impairment scores would be predicted in rats experiencing a CR. Figure 9 depicts the mean impairment scores of Group ETH and Group SAL subjects that either were presented or were not presented with the stimulus.

Insert Figure 9 about here

As can be seen in Figure 9, rats in Group ETH/ON (drug predictive environment) had larger positive impairment scores than all other groups. Group ETH subjects tested with the novel omission of the stimulus had impairment scores very similar to the subjects in both saline groups. A one-way ANOVA conducted on the data summarized in Figure 9 was significant, $F(3,36)=10.53$, $p<.001$. A planned comparison of Group ETH/ON vs. Group ETH/OFF was significant, $F(1,36)=8.12$, $p<.01$. There was no effect when

comparing Group SAL/ON vs. Group SAL/OFF. These comparisons demonstrate that the novel omission of a stimulus disrupted the CR in Group ETH subjects but did not influence impairment for Group SAL subjects. The disruption of tolerance and the CR by both the novel omission of a stimulus and the novel addition of a stimulus is evidence that external inhibition of tolerance results from a general disruption of Pavlovian conditioning and is not related to the specific stimulus used for testing.

Experiment 3a

In Experiment 1 and 2 tests of tolerance and conditional responding occurred within 24 hours of the final tolerance development session. Experiment 3 was designed to evaluate the effect of a novel stimulus on tolerance and the CR when the delay between the final tolerance development session and testing was increased. It was conducted to study the relevance of stimulus generalization to the disruption of tolerance by a novel stimulus.

In Pavlovian conditioning, after repeated CS-US pairings, the CS will elicit a CR. In addition to the CS, other stimuli will elicit the CR and this is called stimulus generalization (16). Stimulus generalization is most pronounced when test stimuli are similar to the CS, therefore, the greater the disparity between the CS and test stimuli, the less generalization observed. Generalization gradients can be constructed which reflect peak responding to the CS, with least responding to test stimuli most dissimilar to it. It is well documented that generalization gradients flatten over time (for a review, see 21 or 22). That is, as the interval between training and testing is increased, stimuli which previously did not elicit a response shortly after training will do so. Riccio and colleagues have suggested that flattening of generalization gradients reflects a loss of memory for stimulus

attributes (21, 22). If an organism detects the disparity between training and test stimuli, no learned response will be elicited. If, over time, the organism fails to discriminate between training and test stimuli a CR will be elicited by the test stimuli. Thus, the failure to discriminate between training and test stimuli modulates flattening of the generalization gradient.

Flattening of the generalization gradient may be relevant to conditioned tolerance. Riccio and colleagues suggest that the "loss of tolerance resulting from a change in context can be seen as directly analogous to stimulus generalization decrement" (9, p.265). When assessing the importance of drug associated cues, tolerance tests often occur in an environment distinct from the drug predictive environment and attenuation of tolerance is evidenced. As the interval between tolerance development and testing increases, the disruptive effect of a context change on tolerance should be minimized since generalization gradients flatten over time. Feinberg and Riccio (9) investigated this prediction. Two groups of rats were made tolerant to morphine's analgesic effect in a drug predictive environment (CS). One group of rats was tested for environmental control of morphine tolerance with a short (2-day) delay between the tolerance development phase of the experiment (training) and testing. A second group of rats were tested with a long (7-day) delay between training and testing. Half of the rats from both the long and short delay groups received a morphine tolerance test in the drug predictive environment. Remaining rats were tested in an alternative environment not associated with morphine. Morphine tolerance was attenuated if testing occurred in the alternative environment after a short delay replicating previous demonstrations of environmental control of tolerance.

Morphine tolerance was not attenuated when testing occurred in the alternative environment after a long delay -- rats remained tolerant to morphine despite the context switch. Based on the results of this experiment, Feinberg and Riccio (9) conclude that conditioned tolerance is subject flattening of the generalization gradient since rats did not discriminate between the training and testing context if tested with a long interval between training and testing.

Feinberg and Riccio (9) demonstrated that environmental control over tolerance is minimized as the interval between training and testing is increased. To the extent that drug associated cues are less relevant to the expression of tolerance after a long delay between training and testing, the disruption of tolerance by a novel stimulus should also be less pronounced after a long delay. This prediction was tested in Experiment 3. In this experiment, the disruption of tolerance and the CR was tested in ethanol-tolerant rats with either a short, 24-hour, delay between the last tolerance development session (training) and testing, or a long, 10-day, delay between training and testing. We predicted that, replicating previous findings, the novel stimulus would attenuate tolerance and disrupt the CR when rats were tested with a short delay between training and testing. We also predicted that the effect of the novel stimulus would be minimized when rats were tested with a long delay between training and testing.

Procedure

Tolerance Development

During tolerance development (days 1-22) subjects were injected with ethanol (Group ETH, n=32) or saline (Group SAL, n=16) during daily experimental sessions. The

strobe/noise stimulus was not presented during experimental sessions.

Short Delay

Sixteen rats from Group ETH were given a test of tolerance and conditional responding test within 2 days of the last tolerance development session.

Tolerance tests. On day 23, 16 Group ETH rats, tested with the short delay (ETH[S]), were injected with ethanol for a tolerance test. Half of the rats were presented with the novel stimulus, as per Experiment 1 (ETH[S]/ON, n=8). Remaining rats were not presented with the novel stimulus (ETH[S]/OFF, n=8)

CR test. On day 24, the same 16 ETH[S] rats, given ethanol during tolerance development sessions, were injected with saline in the test of conditional responding. Half of the rats were presented with the novel stimulus (ETH[S]/ON, n=8). Remaining rats were not presented with the novel stimulus (ETH[S]/OFF, n=8). All rats presented with the stimulus during the tolerance test were not presented with it during the test of conditional responding.

Long Delay

The 16 remaining subjects from Group ETH were given a test of tolerance and conditional responding with a 10-day delay between the last tolerance development session and the first test. All subjects from Group SAL (n=16) were also tested with this 10-day delay. These rats were left undisturbed in the colony room during this 10-day interval.

Tolerance test. On day 33, 16 Group ETH rats, tested with the long delay (ETH[L]), were injected with ethanol for a tolerance test. Half of the rats were presented with the novel stimulus (ETH[L]/ON, n=8). Remaining rats were not presented with the

novel stimulus (ETH[L]/OFF, n=8). The 16 Group SAL rats, given saline during tolerance development sessions, were injected with ethanol in this test. Half of these rats were presented with the novel stimulus (SAL[L]/ON, n=8) and half were not (SAL[L]/OFF, n=8).

CR test. On day 34, the 16 ETH[L] and 16 SAL[L] rats were injected with saline in the test of conditional responding. Half of the rats from Group ETH and half of the rats from Group SAL were presented with the novel stimulus (ETH[L]/ON, n=8; SAL[L]/ON, n=8). Remaining rats were not presented with the novel stimulus (ETH[L]/OFF, n=8; SAL[L]/OFF, n=8). All rats presented with the novel stimulus in the tolerance test were not presented with it in the test of conditional responding.

Results and Discussion

Pre-Injection Scores

Figure 10 depicts the mean pre-injection slip angles (determined prior to injection) for Group ETH and Group SAL subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 10 about here

As can be seen in Figure 10, these pre-injection slip angles displayed session-to-session variability and differed for Group ETH [mean: 46.44] and Group SAL [mean: 43.01]. A mixed-design ANOVA of the data summarized in Figure 10 indicated a significant effect of tolerance development solution (ETH vs. SAL) injected subsequent to pre-injection slip

angle determinations, $F(1,46)=33.48$, $p<.001$. There was also a significant tolerance development solution x block interaction, $F(10,460)=4.78$, $p<.01$.

Tolerance Development

Figure 11 depicts the mean impairment scores for Group ETH and Group SAL subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 11 about here

The ataxic effect of ethanol was present -- Group ETH subjects showed greater impairment than Group SAL subjects. Over the course of tolerance development, Group ETH subjects displayed increasingly less impairment while little change occurred in impairment for Group SAL subjects. A mixed-design ANOVA conducted on the data summarized in Figure 11 indicated a significant tolerance development solution (ETH vs. SAL) x block interaction, $F(10,460)=4.83$, $p<.001$. Further one-way repeated measures analyses indicated a significant effect of block for Group ETH, $F(10,310)=15.77$, $p<.001$, but not for Group SAL.

Tolerance Test

In the tolerance test all rats were injected with ethanol. Figure 12 depicts the mean impairment scores for Group ETH and Group SAL subjects that either were presented or were not presented with the novel stimulus, either 1 day after (ETH[S]), or 11 days after (ETH[L] and SAL[L]), the last tolerance development session.

Insert Figure 12 about here

As can be seen in Figure 12, Group ETH[L] subjects remained tolerant to the ataxic effect of ethanol despite the 10-day interval with no ethanol injections. These subjects were similarly impaired whether they were presented or were not presented with the novel stimulus. Group ETH[S] subjects presented with the novel stimulus were more impaired than Group ETH[S] subjects not presented with the novel stimulus. Group SAL[L] subjects, receiving ethanol for the first time, were similarly impaired whether they were presented or were not presented with the novel stimulus. A one-way ANOVA conducted on the data depicted in Figure 12 was significant, $F(5,42)=6.57$, $p<.001$. A planned comparison of Group ETH[S]/ON vs. Group ETH[S]/OFF was significant, $F(1,42)=13.36$, $p<.001$. There was no effect when comparing Group ETH[L]/ON vs. Group ETH[L]/OFF or when comparing Group SAL[L]/ON vs. Group SAL[L]/OFF. These comparisons demonstrate that Group ETH[S] subjects presented with the novel stimulus were more impaired than Group ETH[S] subjects not presented with the novel stimulus. The novel stimulus had no effect on Group SAL[L] or Group ETH[L] subjects. These results confirm the prediction that external inhibition of tolerance is sensitive to the interval between training and testing. The failure to disrupt tolerance by a novel stimulus when tested with a 10-day delay between training and testing presumably resulted because environmental control over tolerance is less pronounced as the interval between training and testing increased.

CR Test

In the test of conditional responding, all rats were injected with saline and positive impairment scores were expected in rats experiencing a CR. Figure 13 depicts the mean impairment scores of Group ETH and Group SAL subjects that either were presented or were not presented with the novel stimulus, either 2 days after (ETH[S]), or 12 days after (ETH[L] and SAL[L]), the last tolerance development session.

Insert Figure 13 about here

As can be seen in Figure 13, Group ETH[S]/OFF subjects had larger positive impairment scores than Group ETH[S]/ON subjects. This difference, although smaller, was also observed in ethanol-experienced subjects tested with the long delay (i.e., ETH[L]/OFF had larger positive impairment scores than ETH[L]ON). Group SAL[L] subjects that either were presented or were not presented with the novel stimulus were similarly impaired. A one-way ANOVA conducted on the data summarized in Figure 13 was significant, $F(5,42)=4.40$, $p<.01$. A planned comparison of Group ETH[S]/ON vs. Group ETH[S]/OFF was significant, $F(1,42)=5.34$, $p<.05$. There was no effect when comparing Group ETH[L]/ON vs. Group ETH[L]/OFF, $F(1,42)=1.08$, $p=.30$, or when comparing Group SAL[L]/ON vs. Group SAL[L]/OFF. These comparisons demonstrate that the novel stimulus decreased the CR in Group ETH[S]. The novel stimulus also slightly attenuated the CR in Group ETH[L]. The nonsignificant attenuation of the CR in ETH[L] subjects provides evidence that the disruptive effect of a novel stimulus is decreased as the

as the interval between training and testing is increased.

Experiment 3b

In Experiment 3a the effect of a novel stimulus was assessed in rats tested with a short and long delay between training and testing. In Experiment 3a, all tolerance tests were conducted first (i.e., tolerance tests occurred 24 hours before CR tests). Experiment 3b also assessed the disruption of tolerance and the CR with a short and long delay between training and testing. In this experiment, the order of the tests was reversed -- CR tests were conducted before tolerance tests. Other than the order of tests, Experiment 3b was identical to Experiment 3a.

Procedure

Tolerance Development

During tolerance development sessions (days 1-22), subjects were injected with ethanol (Group ETH, n=30) or saline (Group SAL, n=16) during daily experimental sessions. During experimental sessions the strobe/noise stimulus was off.

Short Delay

Fourteen rats from Group ETH were given a test of tolerance and conditional responding within two days of the last tolerance development session.

CR test. On day 23, 14 Group ETH rats, given ethanol during tolerance development sessions, were injected with saline in the test for conditional responding (ETH[S]). Half of the rats were presented with the novel stimulus (ETH[S]/ON, n=7). Remaining rats were not presented with the novel stimulus (ETH[S]/OFF, n=7).

Tolerance test. On day 24, the 14 ETH[S] rats were injected with ethanol in the tolerance test. Half of the rats were presented with the novel stimulus (ETH[S]/ON, n=7) and half were not (ETH[S]/OFF, n=7). All of the rats presented with the stimulus during the CR test were not presented with it during the tolerance test.

Long Delay

The 16 remaining subjects from Group ETH were given a test of tolerance and conditional responding with a 10-day delay between the last tolerance development session and the first test. All subjects from Group SAL (n=16) were also tested with the long delay. These rats were left undisturbed in the colony room during this 10-day interval.

CR test. On day 33, 16 Group ETH rats, given ethanol during tolerance development sessions, were injected with saline in the test of conditional responding (ETH[L]). Half of the rats were presented with the novel stimulus (ETH[L]/ON, n=8). Remaining rats were not presented with the novel stimulus (ETH[L]/OFF, n=8). The 16 Group SAL rats, given saline during the tolerance development sessions, were injected with saline for this test (SAL[L]). Half of these rats were presented with the novel stimulus (SAL[L]/ON, n=8) and half were not (SAL[L]/OFF, n=8).

Tolerance test. On day 34, the 16 ETH[L] and 16 SAL[L] rats were injected with ethanol in the tolerance test. Half of the rats from Group ETH and half of the rats from Group SAL were presented with the novel stimulus (ETH[L]/ON, n=8, SAL[L]/ON, n=8). Remaining rats were not presented with the novel stimulus (ETH[L]/OFF, n=8; SAL[L]/OFF, n=8). All rats presented with the novel stimulus in the test of conditional responding were not presented with it in the tolerance test.

Results and Discussion

Pre-Injection Scores

Figure 14 depicts the mean pre-injection slip angles (determined prior to injection) for Group ETH and Group SAL subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 14 about here

As can be seen in Figure 14, these pre-injection slip angles displayed session-to-session variability, and differed for Group ETH [mean: 44.24] and Group SAL [mean: 42.31]. A mixed-design ANOVA of the data summarized in Figure 14 indicated a significant effect of tolerance development solution (ETH vs. SAL) injected subsequent to the pre-injection slip angle determination, $F(1,44)=4.88$, $p<.05$. There was also a significant tolerance development solution x block interaction, $F(10,440)=2.51$, $p<.01$.

Tolerance Development

Figure 15 depicts the mean impairment score for Group ETH and Group SAL subjects over 2-session blocks during the tolerance development phase of the experiment.

Insert Figure 15 about here

The ataxic effect of ethanol was present -- Group ETH subjects showed greater impairment than Group SAL subjects. Over the course of tolerance development, Group ETH subjects

displayed increasingly less impairment while there was little change in impairment for Group SAL subjects. A mixed-design ANOVA conducted on the data summarized in Figure 15 indicated a significant tolerance development solution (ETH vs. SAL) x block interaction, $F(10,440)=4.70$, $p<.001$. Further one-way repeated measures analyses indicated a significant effect of block for Group ETH, $F(10,290)=13.64$, $p<.001$, but not for Group SAL.

CR Test

In the test of conditional responding all rats were injected with saline and positive impairment scores were expected in rats experiencing a CR. Figure 16 depicts the mean impairment scores of Group ETH and Group SAL subjects that either were presented or were not presented with the novel stimulus, either 1-day after (ETH[S]), or 11-days after (ETH[L] and SAL[L]), the last tolerance development session.

Insert Figure 16 about here

As can be seen in Figure 16, Group ETH[S]/OFF subjects had larger positive impairment scores than Group ETH[S]/ON subjects. This difference, although smaller, was also observed in ethanol-tolerant subjects tested with the long delay (i.e., ETH[L]/OFF had larger positive impairment scores than ETH[L]/ON). Group SAL[L] subjects that either were presented or were not presented with the novel stimulus were similarly impaired. A one-way ANOVA conducted on the data summarized in Figure 16 was significant, $F(5,40)=3.67$, $p<.01$. A planned comparison of Group ETH[S]/ON vs. Group ETH[S]/OFF

was significant, $F(1,40)=5.97$, $p<.05$. There was no effect when comparing Group ETH[L]/ON vs. Group ETH[L]/OFF, $F(1,40)=2.94$, $p=.09$, or when comparing Group SAL[L]/ON vs. Group SAL[L]/OFF. These comparisons demonstrate that the novel stimulus significantly attenuated the CR in Group ETH[S] subjects while only slightly attenuated the CR in Group ETH[L] subjects. Thus, the CR is less affected by the novel stimulus if a long delay occurs between training and testing. These findings were similar to the results from the CR test in Experiment 3a.

Tolerance Test

In the tolerance test all rats were injected with ethanol. Figure 17 depicts the mean impairment scores for Group ETH and Group SAL subjects that either were presented or were not presented with the stimulus, either 2-days after, or 12-days after, the last tolerance development session.

Insert Figure 17 about here

As can be seen in Figure 17, Group ETH[L] subjects remained tolerant to the ataxic effect of ethanol and were similarly impaired whether they were presented or were not presented with the novel stimulus. Group ETH[S] subjects presented with the novel stimulus were more impaired than Group ETH[S] subjects that were not presented the novel stimulus. Group SAL[L] subjects, receiving ethanol for the first time, were similarly impaired whether they were or were not presented with the novel stimulus. A one-way ANOVA conducted on the data summarized in Figure 17 was significant, $F(5,40)=10.95$, $p<.001$. A

planned comparison of Group ETH[S]/ON vs. Group ETH[S]/OFF was significant, $F(1,40)=6.27$, $p<.02$. There was no effect when comparing Group ETH[L]/ON vs. Group ETH[L]/OFF or when comparing Group SAL[L]/ON vs. Group SAL[L]/OFF. These comparisons demonstrate that Group ETH[S] subjects tested with the novel stimulus were more impaired than Group ETH[S] subjects not tested with the novel stimulus. The novel stimulus had no effect on Group SAL[L] or Group ETH[L] subjects.

The results from the tolerance test in Experiment 3a and 3b confirm that tolerance to ethanol-induced ataxia is retained over a 10-day period with no ethanol injections. Tolerance was not significantly disrupted by the novel stimulus for the subjects tested with a long delay between training and testing. The novel stimulus did disrupt tolerance in subjects tested after a short delay. Based on these findings, it is evident that the disruption of tolerance by a novel stimulus is decreased as the interval between training and testing is increased.

General Discussion

Disruption of Tolerance by a Novel Stimulus

The results of the tolerance development phase of the experiments reported in this paper demonstrate that tolerance to ethanol-induced ataxia is apparent within 22 tolerance development sessions. These findings are consistent with Siegel and Larson (31) who also report tolerance to ethanol-induced ataxia within 22 days.

In these experiments we demonstrate that a novel stimulus reinstates ataxia in ethanol-tolerant rats if tested shortly after the final tolerance development session. We have also shown that the novel stimulus does not enhance ethanol-induced ataxia in rats

receiving ethanol for the first time, either on the first day of experimentation (Experiment 2) or after 22 saline sessions (Experiments 1, 2 and 3). It was important to demonstrate that the strobe/noise stimulus did not enhance ataxia in subjects receiving ethanol for the first time to ensure that the attenuation of tolerance by a novel stimulus was not resulting from a nonassociative enhancement of ethanol's effect (2, 17). Since the novel stimulus only enhanced impairment in subjects tolerant to the ataxic effect of ethanol, it appears that the novel stimulus was disrupting Pavlovian conditioning mediating tolerance. The observation that a novel stimulus will disrupt tolerance without enhancing ataxia in rats receiving ethanol for the first time is consistent with previous findings by Siegel and Larson (31).

In Experiment 2, we demonstrated the attenuation of tolerance by the omission of an expected cue. This finding is similar to reports that the novel omission of an interoceptive (ethanol) cue will attenuate morphine tolerance (19). Evidence that both the novel addition of a stimulus and the novel omission of a stimulus attenuates tolerance provides converging evidence that the disruption of tolerance by a novel stimulus is attributable to a disruption of Pavlovian conditioning.

A more complete attenuation of tolerance occurred when the novel stimulus was the novel addition of the strobe/noise stimulus (Experiment 1), than when it was the novel omission of the stimulus (Experiment 2). These differences may relate to the strength of the novel stimulus. Previous research has demonstrated that external inhibition depends, in part, upon the intensity of the external inhibitor (37). Because the novel omission of the strobe/noise stimulus involved turning on the overhead fluorescent lights and turning off

the strobe light/white noise, this created an environment similar to the animal colony in terms of noise and lighting. On the other hand, the addition of the novel stimulus involved introducing a stimulus (strobe light/white noise) to the animals unlike any they had previously experienced. It is conceivable, then, that the omission of the strobe/noise may not have been as novel or intense a stimulus as the addition of the strobe light/white noise. Such a difference in the strength of the novel stimulus between experiments may account for the less complete disruption of tolerance seen in Experiment 2.

Disruption of Conditional Responding

In this series of experiments we have demonstrated a "hypertaxic" compensatory CR. That is, ethanol-tolerant rats injected with saline in the drug-associated environment displayed an enhanced ability to stay on the tilting plane. This finding confirms that tolerance to ethanol's ataxic effect is mediated by a compensatory CR, as speculated by Siegel and Larson (31). The CR observed in these experiments, enhanced behavioral functioning, is similar to evidence that people demonstrate enhanced performance in a behavioral task when expecting alcohol but receiving a placebo (23).

The conditional hypertaxic response was disrupted by both the addition of a novel stimulus and the novel omission of a stimulus if testing occurred shortly after the final tolerance development session. This finding is important because it provides converging evidence that the attenuation of tolerance by a novel stimulus results from the disruption of a CR. External inhibition was indeed occurring.

Some tests of the Pavlovian conditioning analysis of tolerance have, on a number of occasions, failed to demonstrate compensatory CRs (e.g., 7). In some cases a

compensatory CR is observed but not in other cases and the reason for this remains unclear. Evidence that the novel omission of an event can disrupt a CR has implications for understanding failure to observe compensatory CRs during placebo tests in drug-tolerant subjects. Evidence presented here (Experiment 2) and by Poulos, et al., (19), demonstrates that the nonoccurrence of an event disrupts a CR. This, coupled with evidence that the early drug effect can signal the later drug effect (35), leads to the suggestion that a placebo test may cause external inhibition. It has been shown that interoceptive pharmacological events, acting as a CS, can signal an oncoming drug effect (11). In the case of slow-acting drugs, it is possible that the early drug effects signal the later, peak, drug effects, just as a CS signals a US. In a placebo test, normally used to test for a CR, the early drug effect is not present. The novel omission of this early drug effect may attenuate the expected CR. Indeed, "it is not surprising that the omission of all drug cues in a placebo test occasionally result in a failure to detect CRs" (19, p. 415).

Relevance of Interval Between Training and Testing

Tolerance to ethanol-induced ataxia was still apparent when testing occurred with a 10-day delay between the last tolerance development session and the first test. The retention of tolerance to the ataxic effect of ethanol is compatible with other observations that tolerance to the behavioral impairing effect of ethanol can be retained for a number of weeks in the absence of continued ethanol administrations (e. g., 12). Retention of tolerance is also compatible with predictions made by the Pavlovian conditioning analysis of tolerance. According to Pavlovian conditioning, once an association has been learned between a CS and US, to substantially decrease the strength of this relationship the CS

must be presented in the absence of the US (16, 5). Even if conditioning trials are infrequent, a learned response will be retained. If, however, the CS is presented repeatedly in the absence of the US, extinction will occur (i.e., the organism will learn that the CS no longer signals the US, so no CR will be elicited). According to the Pavlovian conditioning analysis of tolerance, once tolerance has developed it should be retained in the absence of drug administrations as long as the CS (drug predictive stimulus) is not presented. In Experiment 3, rats were left undisturbed in their home cage for a 10-day period between the final tolerance development session and testing. Since no extinction trials occurred during this time, the retention of tolerance observed in this experiment is consistent with a Pavlovian conditioning analysis of tolerance.

The novel stimulus did not attenuate ethanol tolerance in subjects tested with a long delay between training and testing illustrating that the interval between training and testing is important for the demonstration of external inhibition of tolerance. This result is compatible with findings of Feinberg and Riccio (9) who demonstrated that rats fail to show environmental control of tolerance if tested with a long interval between training and testing.

A CR was observed after a 10-day delay between the tolerance development phase of the experiment and testing. Evidence of a CR after this long delay supports that suggestion that the retention of tolerance is mediated by the retention of Pavlovian conditioning. The CR, evident after this 10-day delay, was disrupted slightly, but not significantly, by the novel stimulus. The failure of the novel stimulus to significantly attenuate ethanol tolerance and the CR mediating tolerance if a long delay between training

and testing occurred is predicted if environmental control over tolerance is diminished as the interval between training and testing is increased (9, 22). Our findings reinforce the importance of considering the interval between training and testing when studying environmental control of tolerance.

A Pavlovian versus an Instrumental Analysis

The results presented in this paper are consistent with a Pavlovian interpretation of tolerance -- the presentation of a novel stimulus disrupts ethanol tolerance and minimizes a compensatory CR mediating tolerance. However, if a 10-day delay occurs between the tolerance development phase of the experiment and testing, the effect of the novel stimulus is diminished. While these results are consistent with a Pavlovian interpretation, it is possible that the compensatory hypertaxic response observed in ethanol-tolerant rats could be an instrumentally learned response.

Tolerance to the behavioral impairing effect of ethanol may be mediated by an instrumental strategy learned as a result of intoxicated practice on the tilting plane. This is similar to a suggestion made by Dews (4) that humans acquire a behavioral strategy to compensate for ethanol-induced impairment. It has been noted that experienced drinkers are less impaired by alcohol than inexperienced drinkers. Dews suggested that the experienced drinker may have acquired a behavioral strategy (e.g., a broad-based gait) as a result of intoxicated practice that would assist them in coping with drug-induced impairments. An instrumental strategy similar to the one described in humans could be acquired in rats. For example, postural adjustments that maintain the rat on the tilting plane may be learned. These hypothesized postural adjustments may be reinforcing as they

delay sliding down the tilting plane and may restore balance to the animal. An instrumental response of this nature would assist the rat in coping with the effects of ethanol. Alternatively, the CR observed in rats tolerant to the ataxic effect of ethanol may mimic an unconditional response elicited reflexively by the unconditional stimulus (e.g., a change in muscle control) which restores homeostasis to the organism (18).

The nature of the hypertaxic CR remains to be determined -- we have not investigated whether this response is a classically or instrumentally mediated response. Importantly, because instrumental conditioning, like Pavlovian conditioning, is disrupted by a novel stimulus (10, 36, 38), the findings reported in this paper are consistent with both interpretations.

Human Implications

Regardless of the nature of the conditional response (i.e., instrumental or classical), the attenuation of tolerance by a novel stimulus has important implications. The conditioning analysis of tolerance has been shown to be important in understanding drug overdose (14, 15, 30, 34). Based on findings of external inhibition of tolerance, we would predict that if people consistently administer a drug under one set of circumstances, a novel stimulus presentation or the novel omission of a stimulus should disrupt tolerance and result in an exaggerated drug effect. Indeed, anecdotal evidence supports such a suggestion (26, 29). Finally, the disruption of tolerance by a novel stimulus may have forensic implications. For instance, a drug effect may be enhanced in an apparently tolerant person by a novel stimulus, such as the arrival of the police (13).

Footnotes

1. When the conditioning analysis of tolerance was first presented over 20 years ago, pharmacological CRs were described as opposite in direction to the pharmacological UCR, the UCR being defined as the measured drug effect (24). However, "there has been an important revision of the Pavlovian analysis of tolerance since its initial formulation" (18, p. 392; see also 6, 8, 20). The pharmacological CR, although typically opposite in direction to the drug effect, is not opposite to the unconditional response elicited by the drug. This primary drug effect is the UCS -- it unconditionally elicits responses that typically (but not always, see 20) attenuate this primary effect. Conditional responses that mediate tolerance are in the same direction as this drug-elicited compensatory response, thus they are compensatory to the drug effect.

2. The measure of maximum impairment has been used by ourselves (31) and others (1) when measuring the behavioral impairing effect of ethanol with the tilting plane. Two other methods of data treatment were used to confirm that maximum impairment was an appropriate method of compiling the data. In one case, the smallest post injection slip angle/the pre-injection slip angle x 100 computed a per cent of baseline impairment score. Results obtained in this analysis were similar to results obtained using maximum impairment. In addition, analyses were conducted which took into consideration Newton's of force [$\text{mass} \times \text{gravity} \times \sin\theta$]. Once again, this data treatment produced results similar to maximum impairment scores. Because maximum impairment produces similar findings to these other 2 methods and is consistent with other reports in the literature, all analyses in this paper will use a maximum impairment score to index ataxia.

Figure Captions

Figure 1. Mean pre-injection slip angles (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 1).

Figure 2. Mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 1).

Figure 3. Mean impairment scores ($+ 1$ SEM) displayed by saline-injected rats that either were presented or were not presented with the strobe/noise in the test of conditional responding (Experiment 1). Group SAL rats received saline throughout the experiment; Group ETH rats received saline for the first time on this test.

Figure 4. Mean impairment scores ($+ 1$ SEM) displayed by ethanol-injected rats that either were presented or were not presented with the strobe/noise in the tolerance test (Experiment 1). Group SAL rats received ethanol for the first time on this test; Group ETH rats received ethanol throughout the experiment.

Figure 5. Mean impairment scores ($+ 1$ SEM) displayed by ethanol- and saline-injected subjects that either were presented or were not presented with the strobe/noise in the pre-tolerance test (Experiment 2).

Figure 6. Mean pre-injection slip angles (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 2).

Figure 7. Mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 2).

Figure 8. Mean impairment scores ($+ 1$ SEM) displayed by ethanol-injected rats that either were presented or were not presented with the strobe/noise in the tolerance test

(Experiment 2). Group SAL rats received ethanol for the first time on this test; Group ETH rats received ethanol throughout the experiment.

Figure 9. Mean impairment scores (+ 1 SEM) displayed by saline-injected rats that either were presented or were not presented with the strobe/noise in the test of conditional responding (Experiment 2). Group SAL rats received saline throughout the experiment; Group ETH rats received saline for the first time on this test.

Figure 10. Mean pre-injection slip angles (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 3a).

Figure 11. Mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 3a).

Figure 12. Mean impairment scores (+ 1 SEM) displayed by ethanol-injected rats either were presented or were not presented with the strobe/noise in the tolerance test with either a short (S) or long (L) delay between tolerance development and the first test (Experiment 3a). Group SAL rats received ethanol for the first time on this test; Group ETH rats received ethanol throughout the experiment.

Figure 13. Mean impairment scores (+ 1 SEM) displayed by saline-injected rats that either were presented or were not presented with the strobe/noise in test of conditional responding with either a short (S) or long (L) delay between tolerance development and the first test (Experiment 3a). Group SAL rats received saline throughout the experiment; Group ETH rats received saline for the first time on this test.

Figure 14. Mean pre-injection slip angles (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 3b).

Figure 15. Mean impairment scores (± 1 SEM) for ethanol- and saline-injected subjects over 2-session blocks during tolerance development (Experiment 3b).

Figure 16. Mean impairment scores ($+ 1$ SEM) displayed by saline-injected rats that either were presented or were not presented with the strobe/noise in the test of conditional responding with either a short (S) or long (L) delay between tolerance development and the first test (Experiment 3b). Group SAL rats received saline throughout the experiment; Group ETH rats received saline for the first time on this test.

Figure 17. Mean impairment scores ($+ 1$ SEM) displayed by ethanol-injected rats that either were presented or were not presented with the strobe/noise in the tolerance test with either a short (S) or long (L) delay between tolerance development and the first test (Experiment 3b). Group SAL rats received ethanol for the first time on this test; Group ETH rats received ethanol throughout the experiment.

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Figure 1.

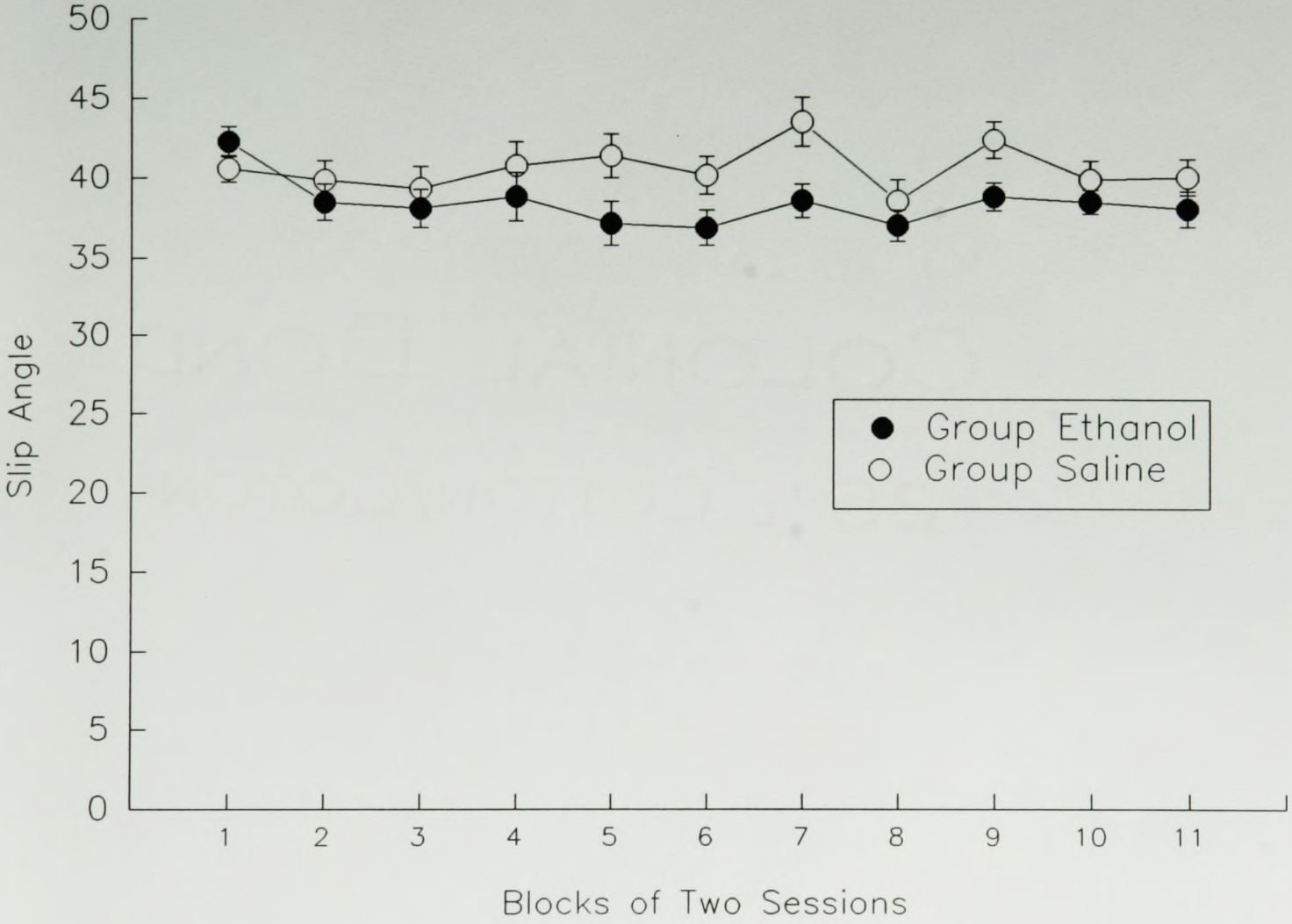


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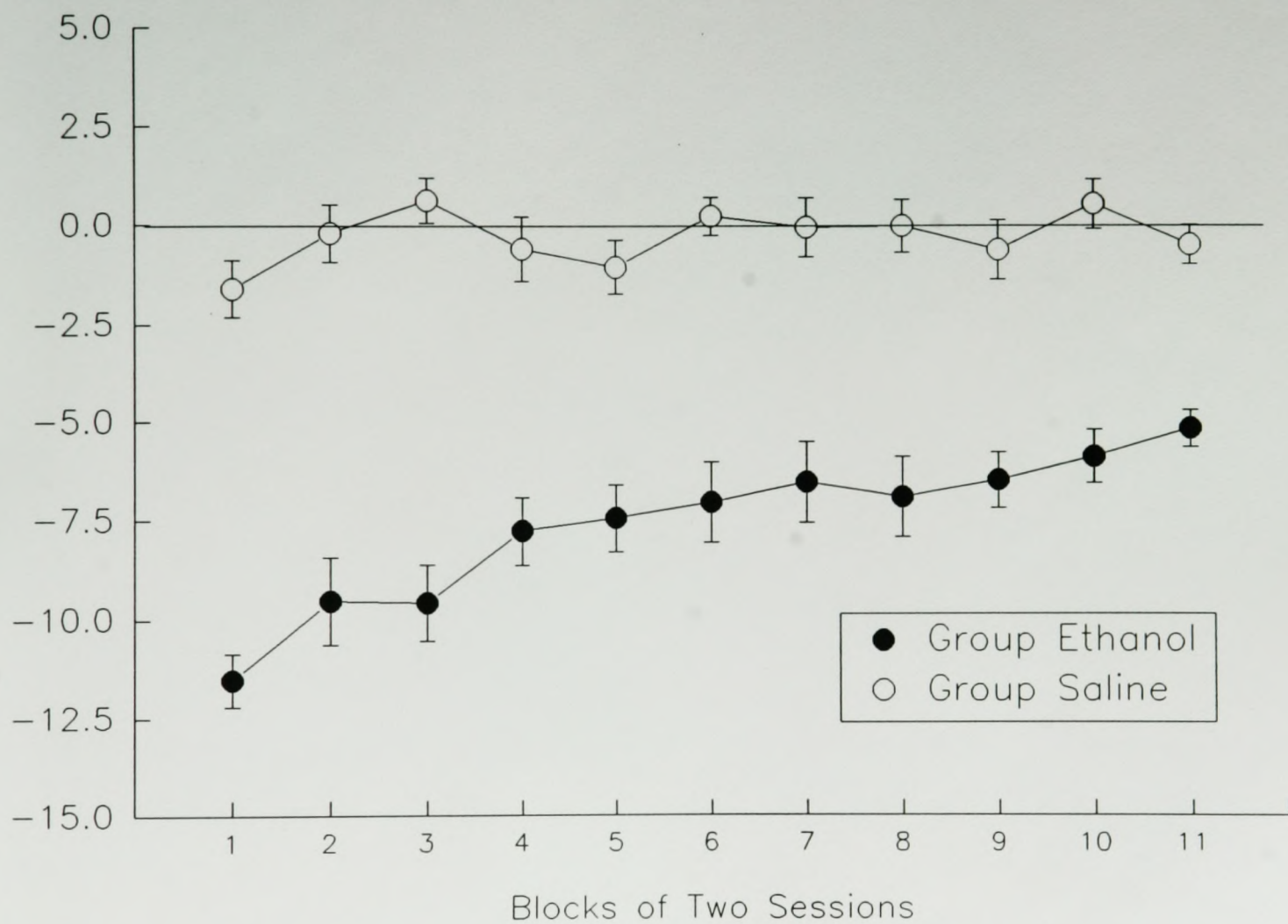


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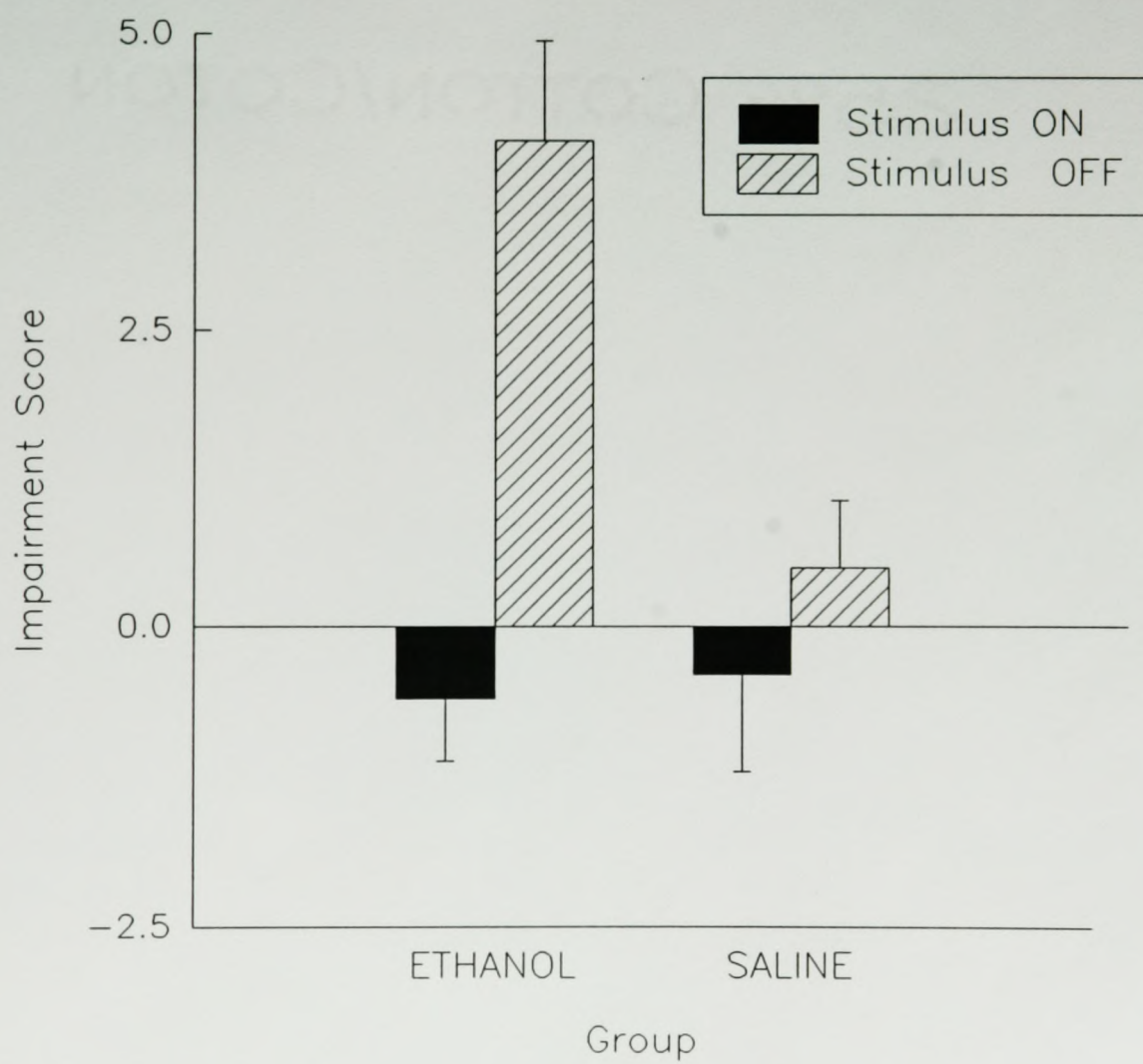


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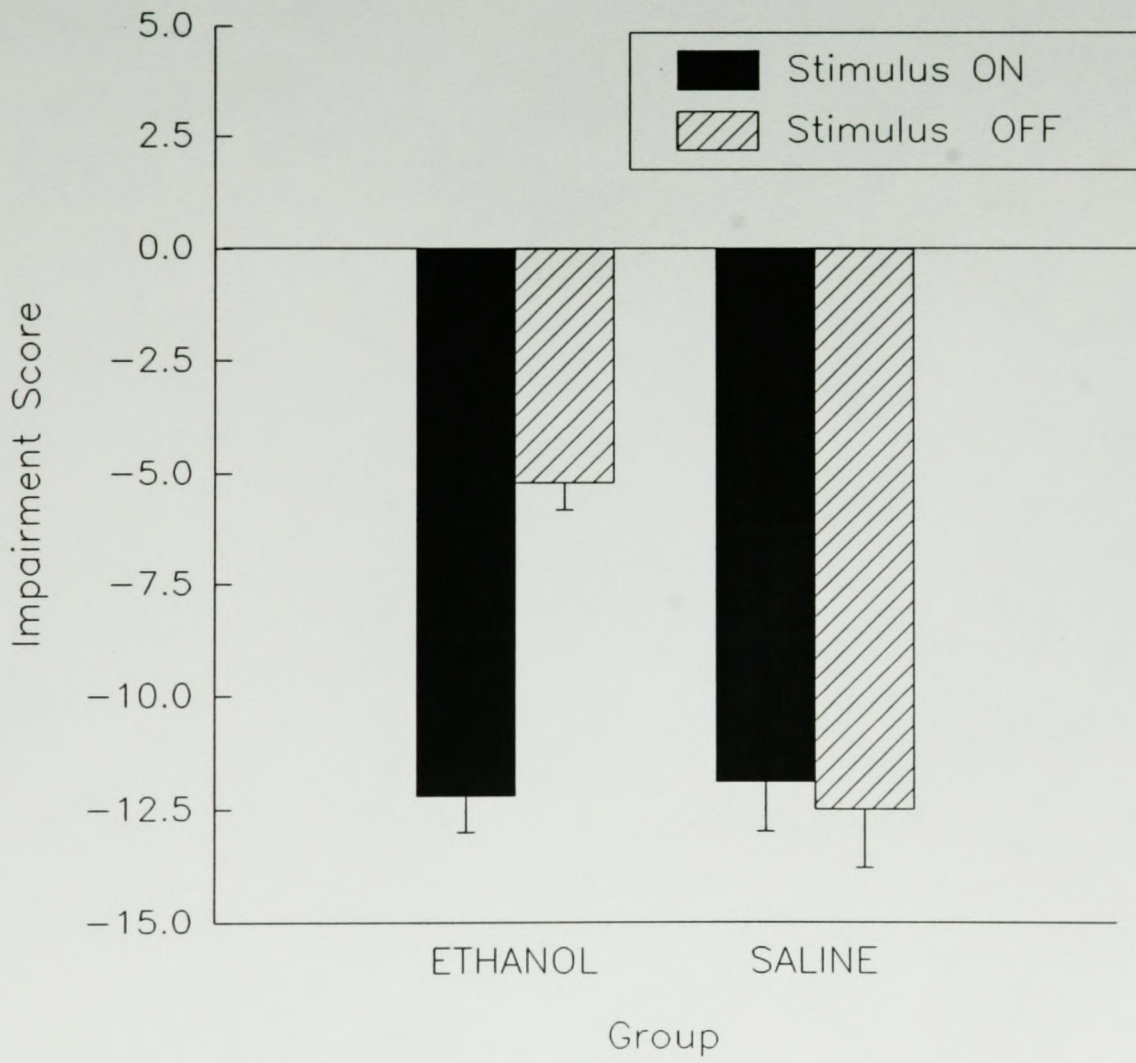


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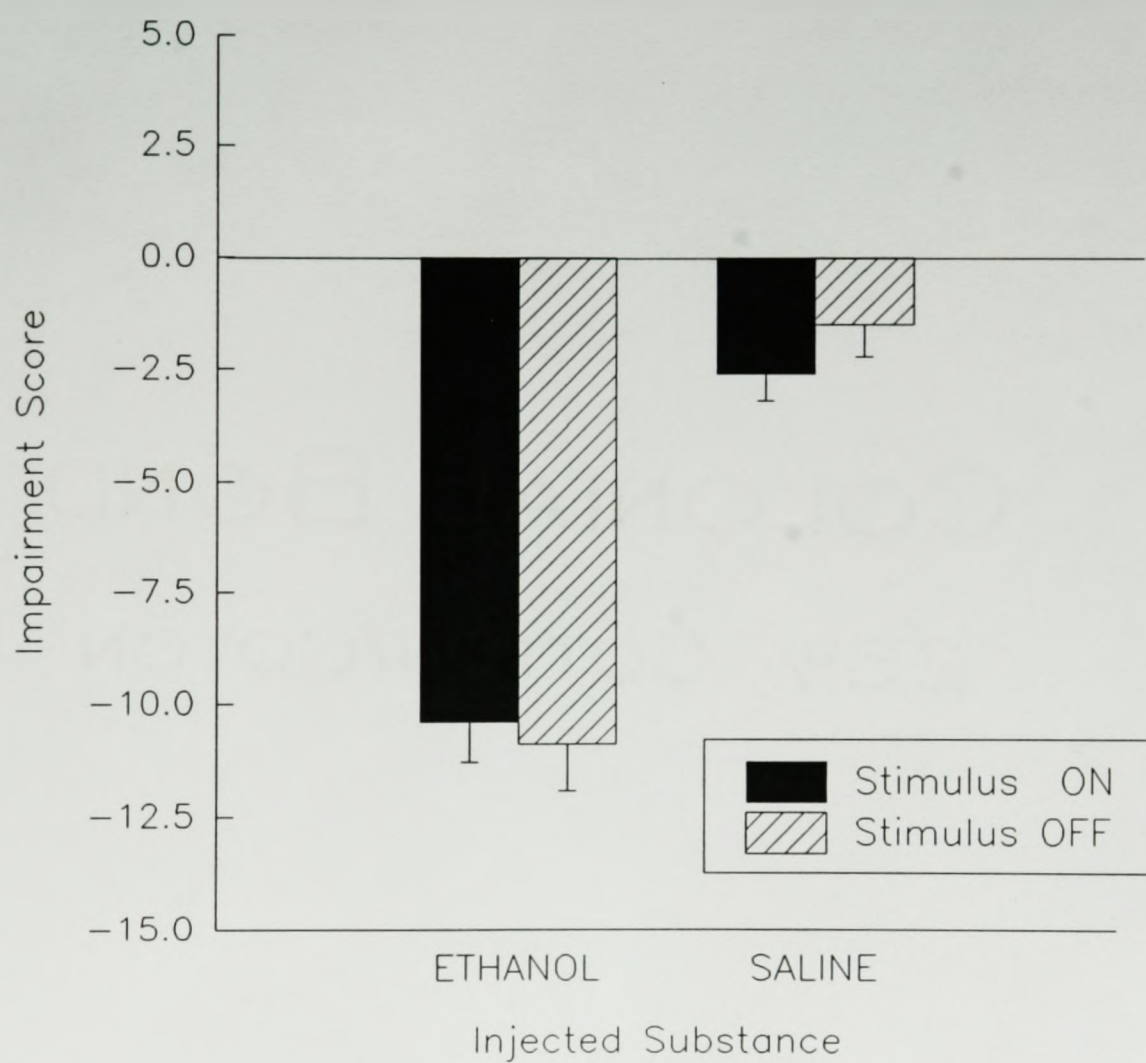


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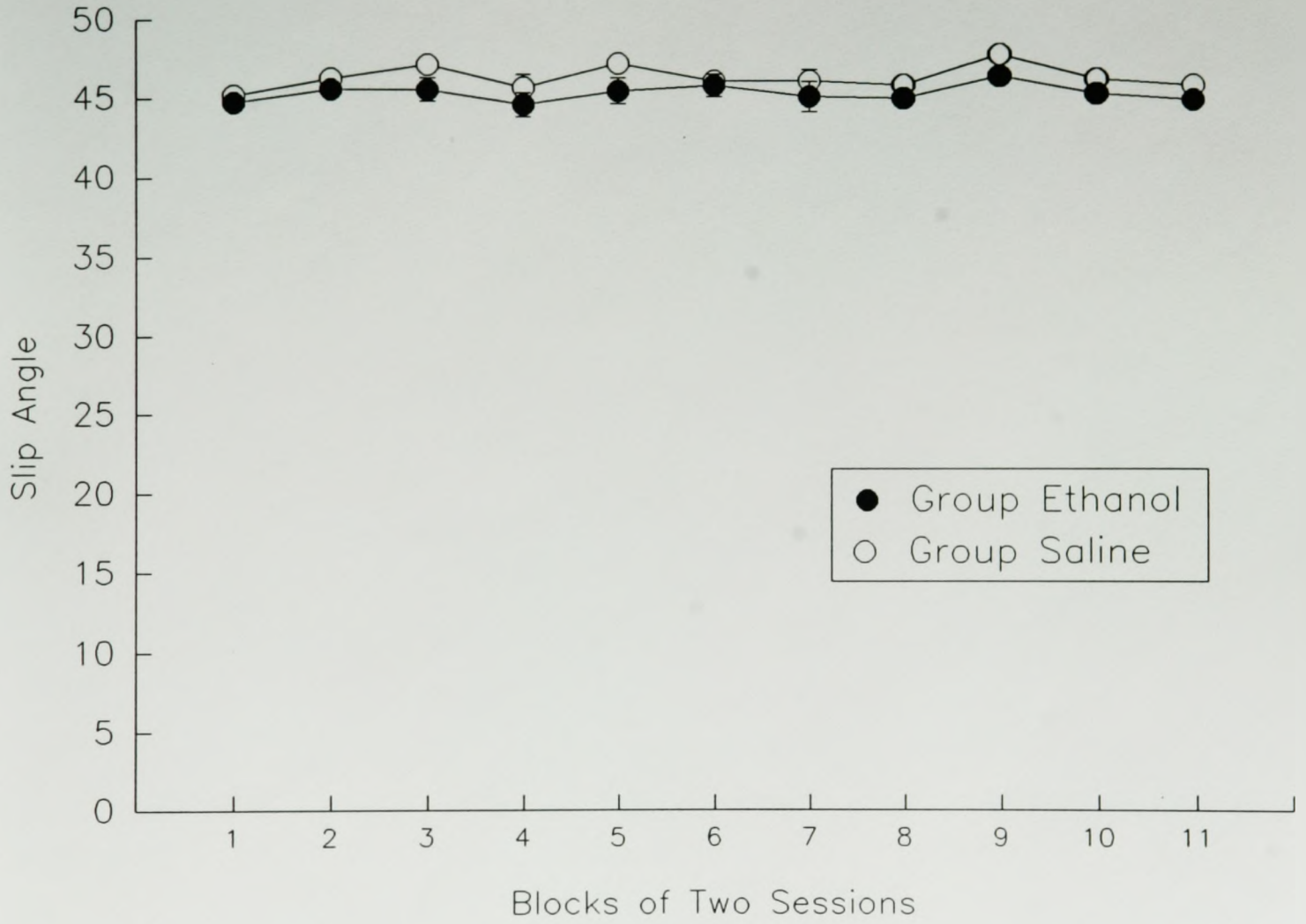


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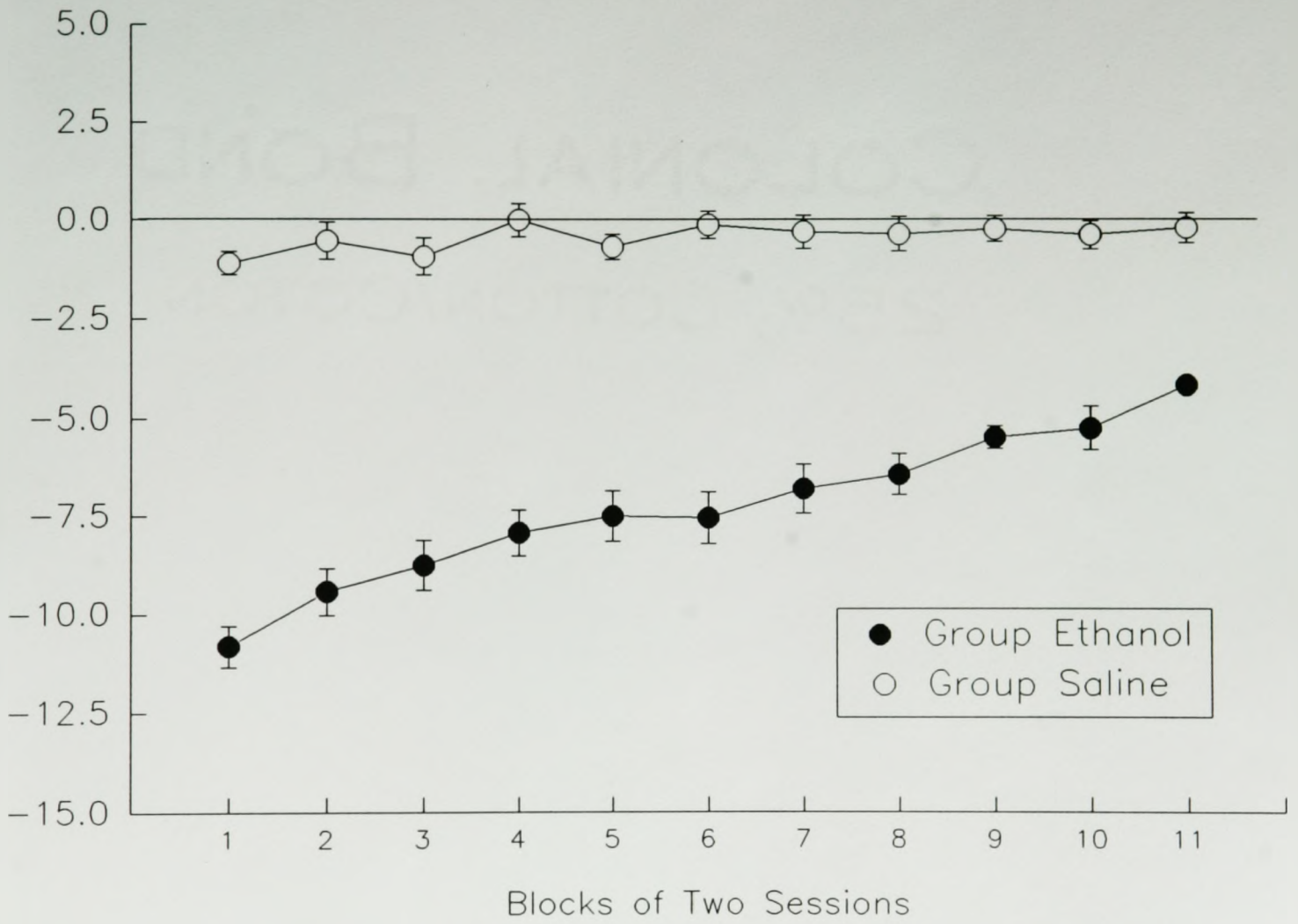


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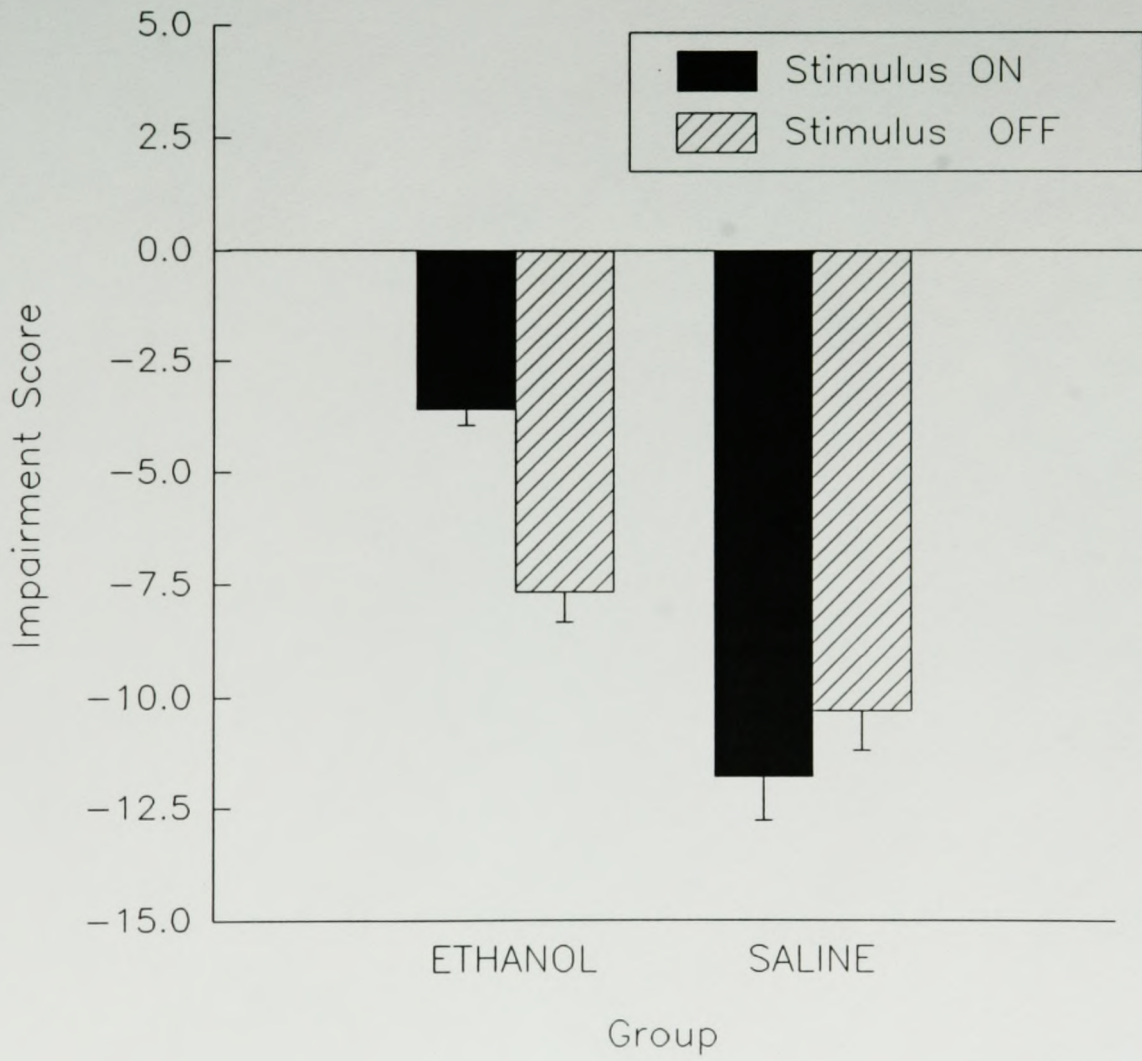


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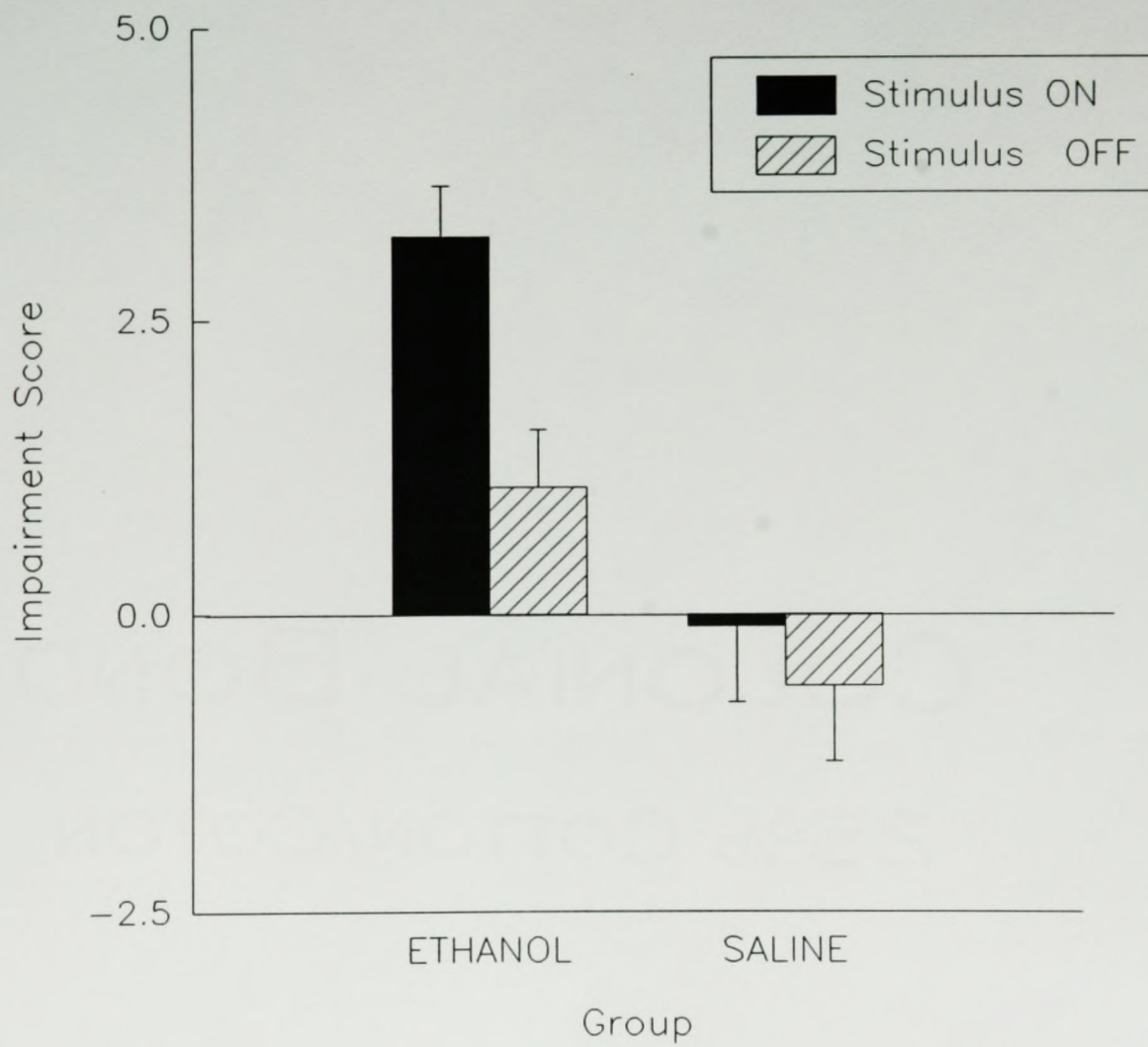


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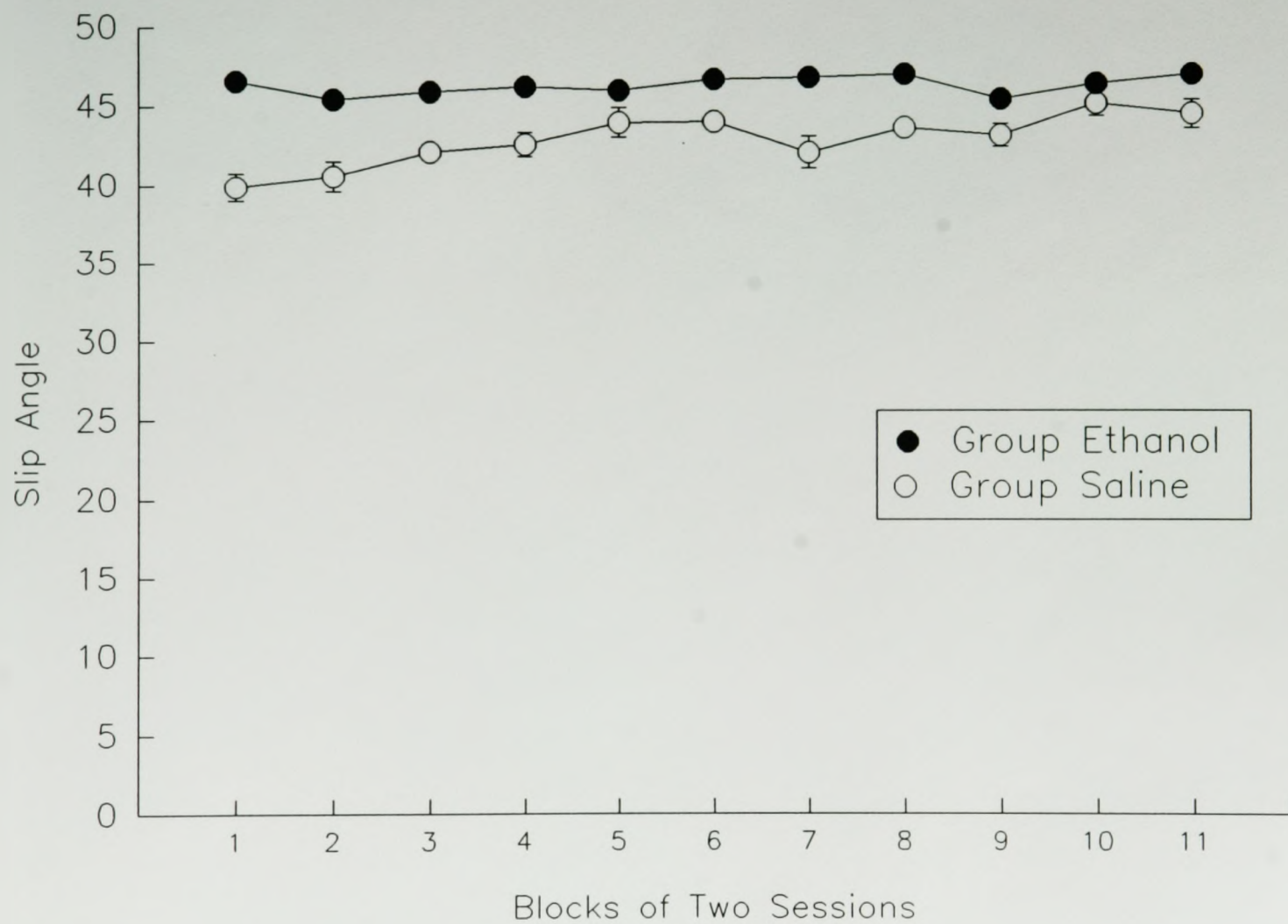


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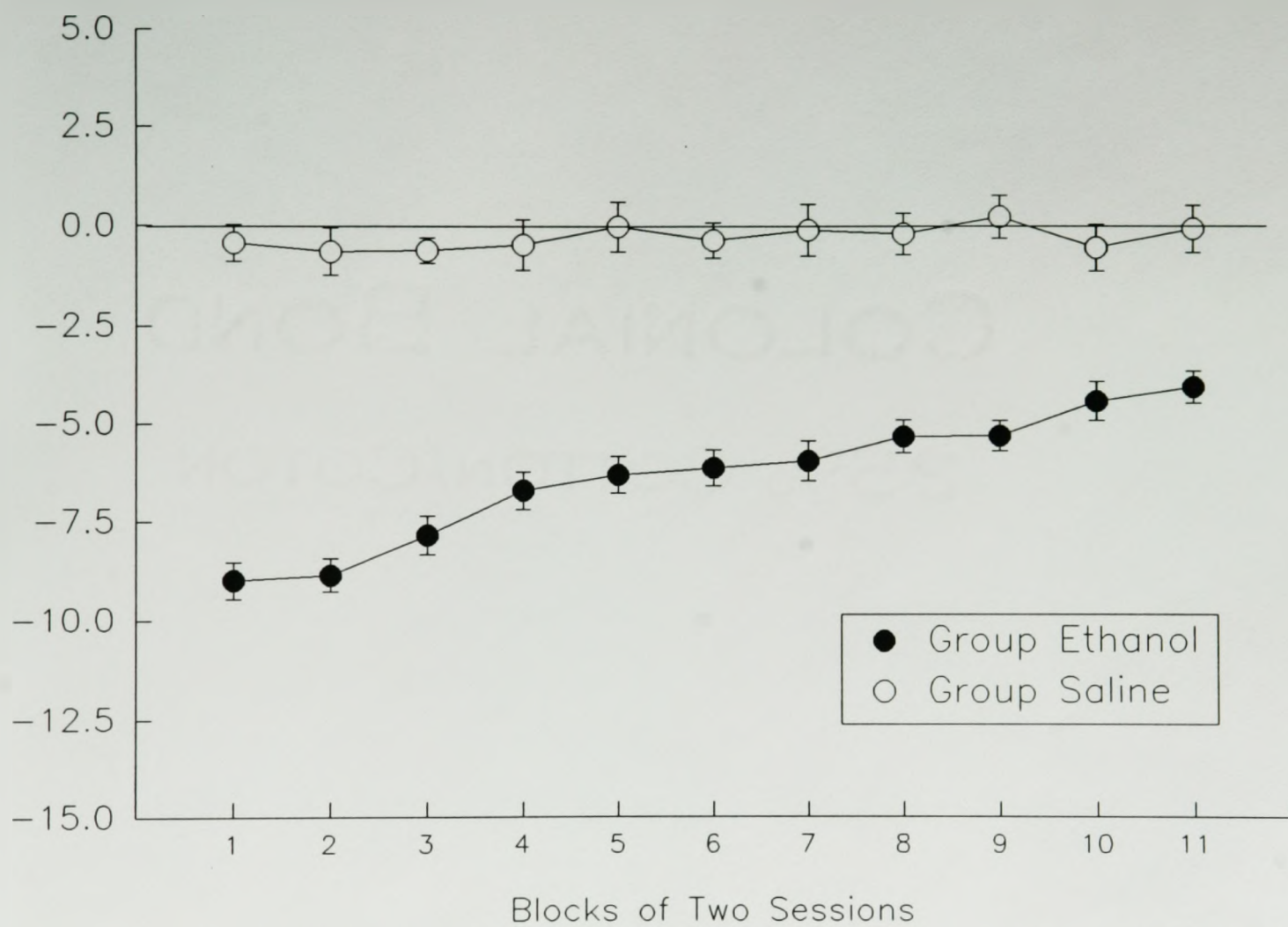


Figure 12.

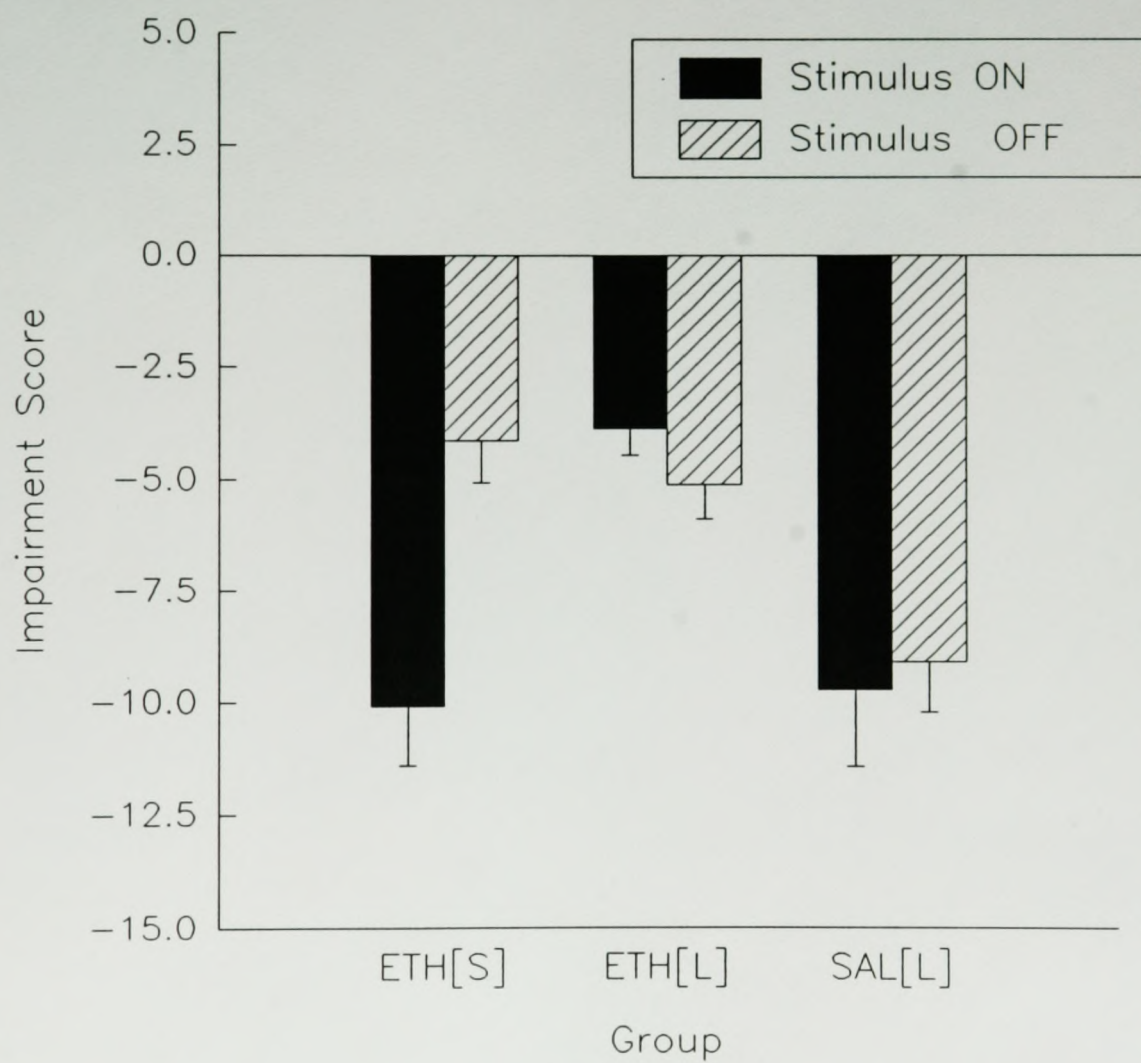


Figure 13.

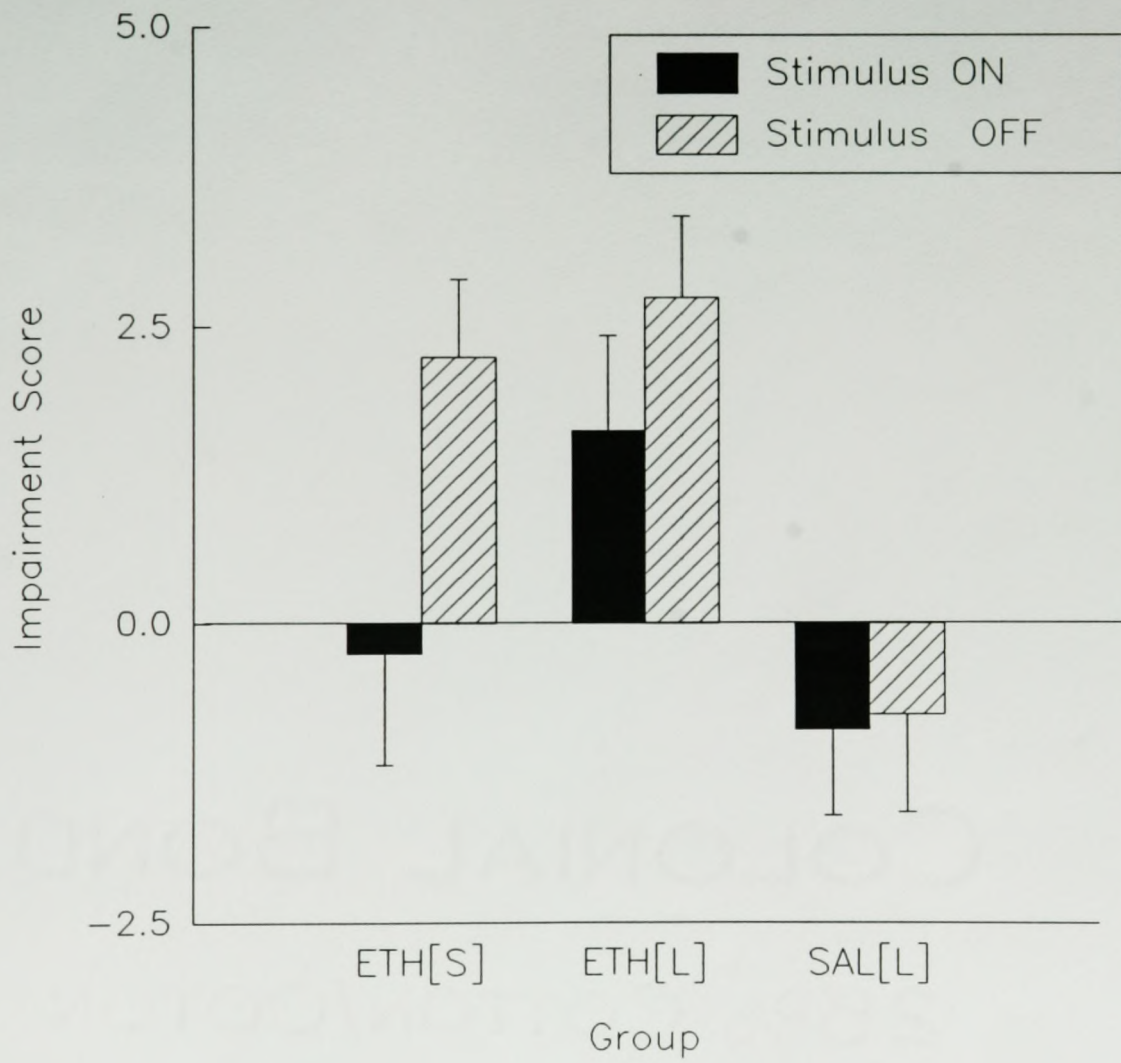


Figure 14.

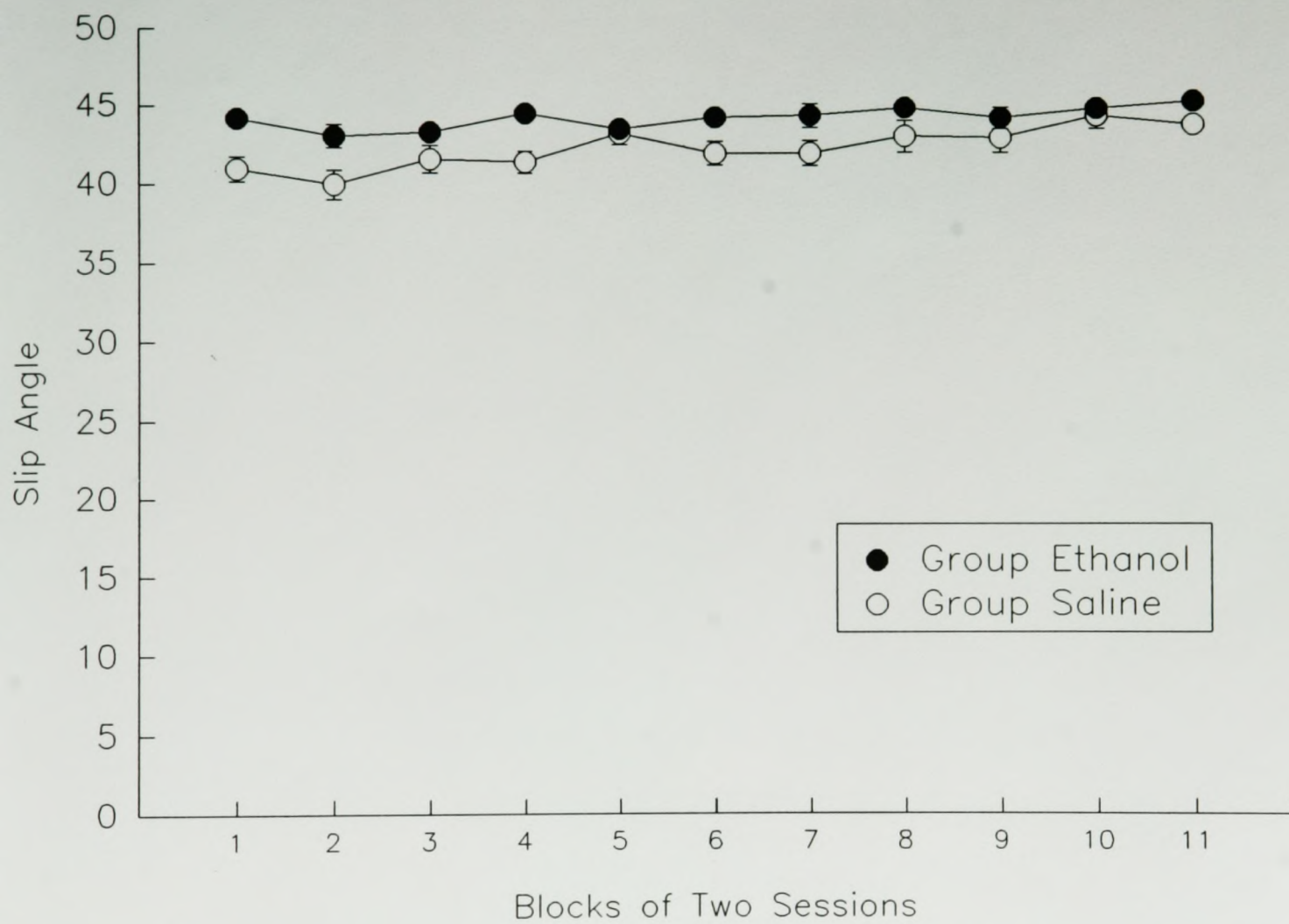


Figure 15.

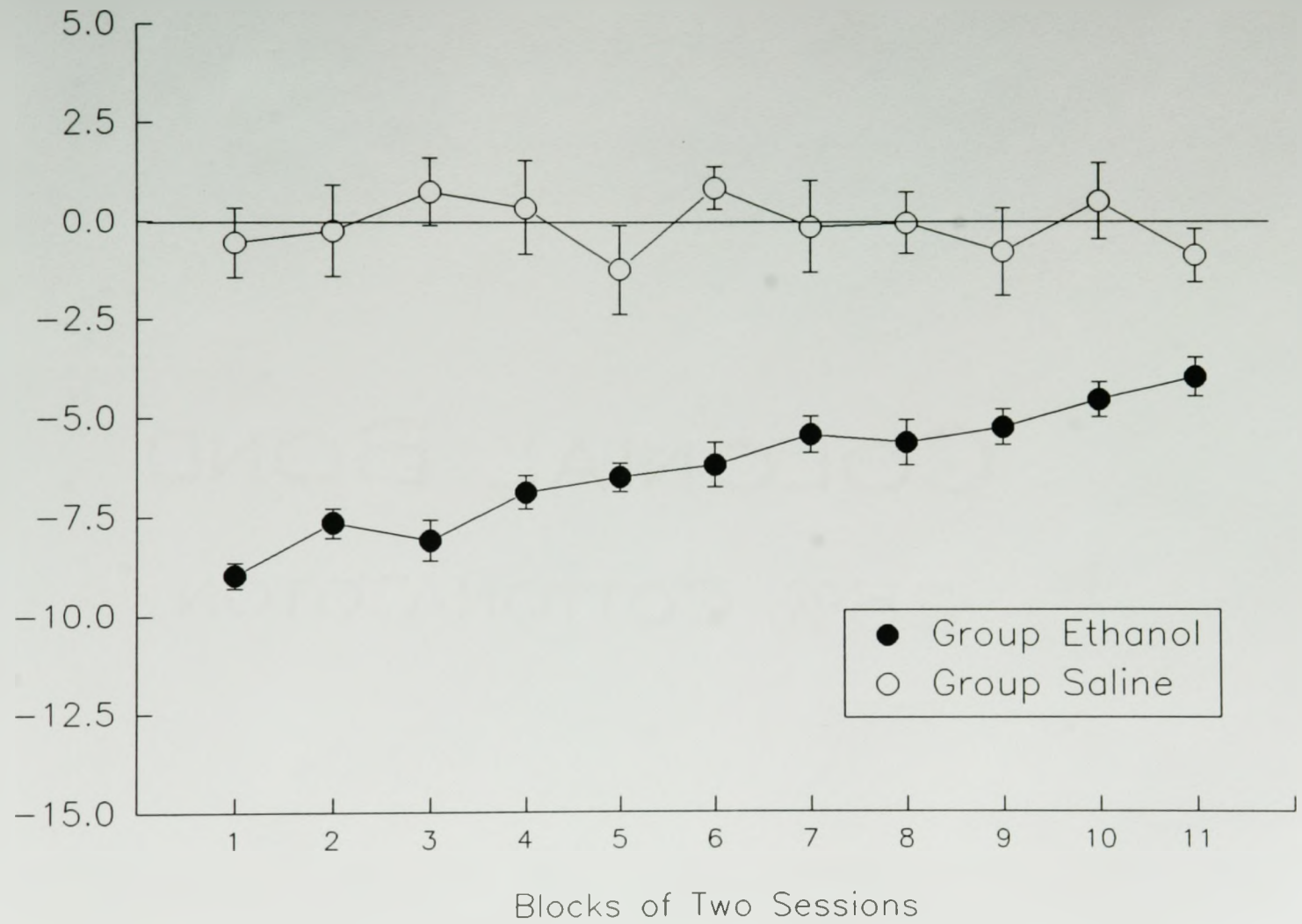


Figure 16.

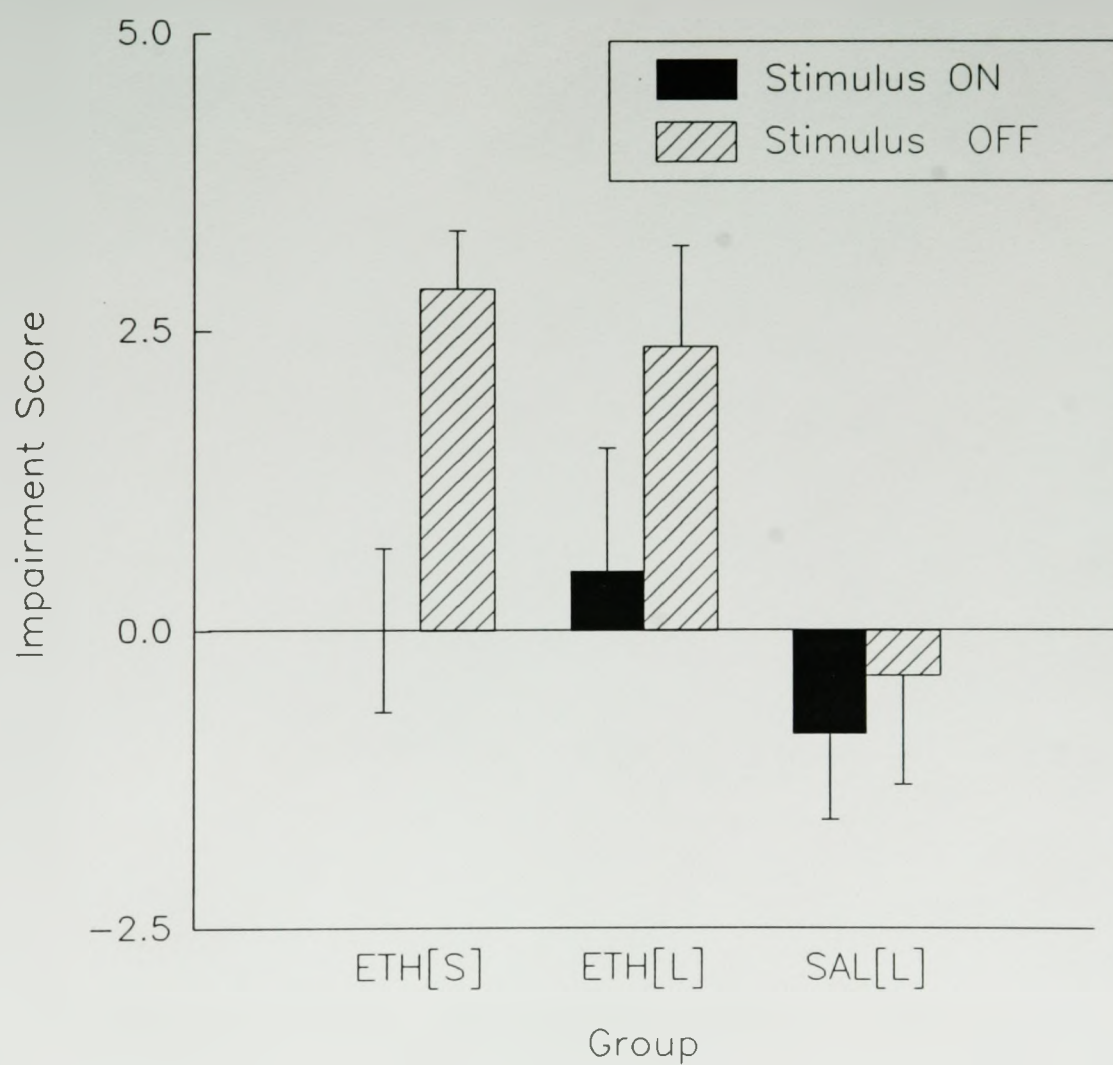
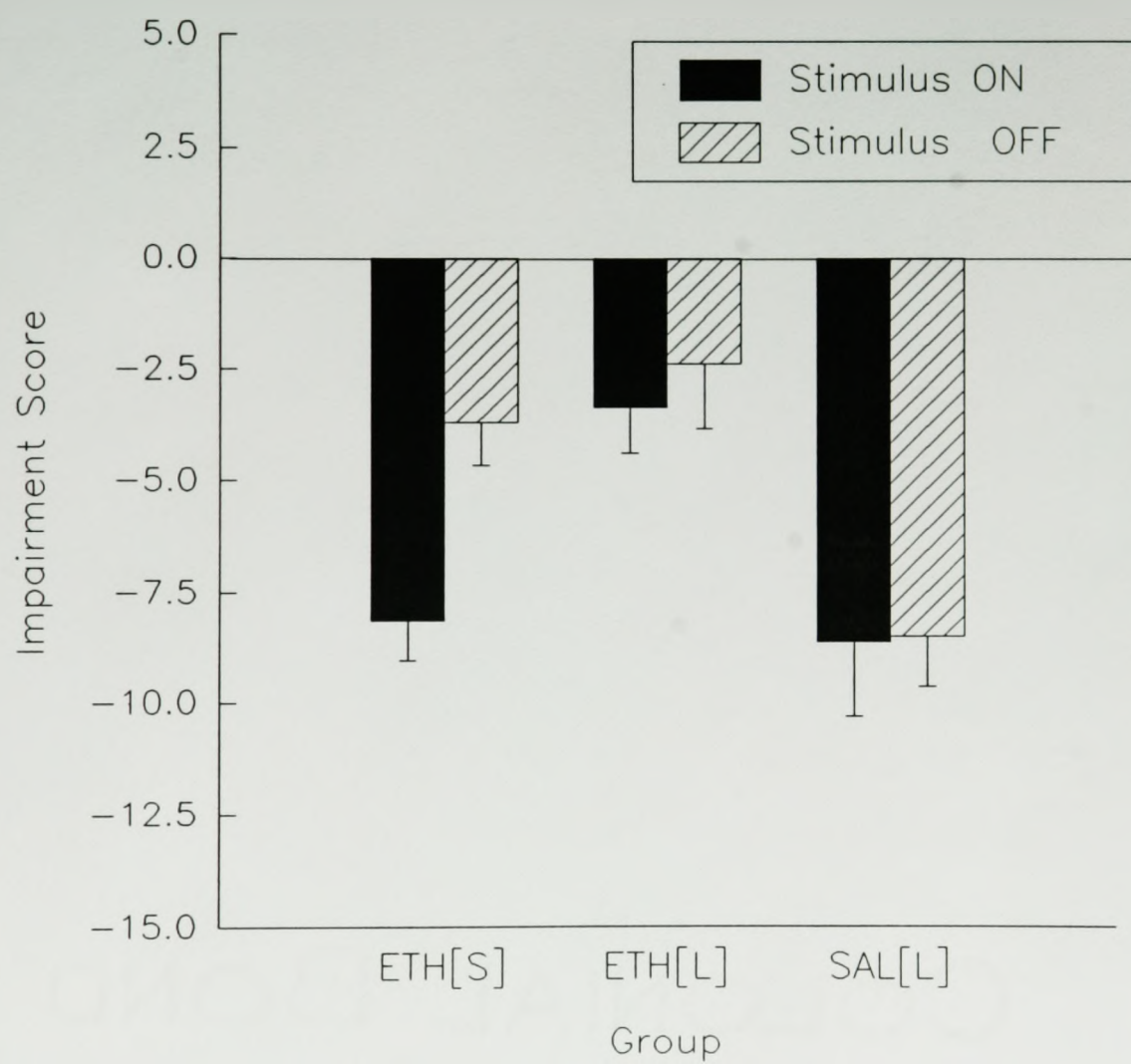


Figure 17.



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APPENDIX A

Raw data collected for the experiment presented in Chapter 2

Chapter 2 -- Replication of Cunningham and Bischof (1987)

DAY ONE

SUBJ	COND	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
	10 ETH/STR	36.42	36.97	36.88	36.19	36.25	36.14	36.32	35.89	36.25	36.16	35.99	36.08
	20 ETH/STR	38.38	38.24	38.07	37.90	37.93	37.90	37.93	37.87	37.93	37.97	38.08	38.17
	18 ETH/STR	36.31	36.11	36.30	35.94	35.96	35.93	36.21	35.92	35.74	35.77	35.91	35.73
	17 ETH/STR	36.48	36.20	35.91	36.00	35.97	35.78	35.97	35.90	35.90	35.34	35.57	35.20
	11 ETH/STR	36.30	36.17	35.82	35.55	35.90	35.78	35.78	35.81	35.97	35.88	36.13	36.43
	9 ETH/STR	36.34	36.13	36.34	36.08	36.22	36.24	36.39	35.91	36.29	36.26	36.35	36.19
	1 ETH/NOS	36.35	35.91	36.27	36.46	36.44	36.58	36.34	36.51	36.44	36.55	36.48	36.54
	6 ETH/NOS	36.16	36.19	35.92	35.60	35.83	35.73	35.69	35.95	35.85	35.69	35.90	35.89
	24 ETH/NOS	37.10	36.81	36.68	36.71	36.53	36.53	36.53	36.58	36.80	36.68	36.85	37.12
	2 ETH/NOS	36.38	35.83	35.91	36.15	35.87	35.96	36.11	36.02	36.10	35.79	35.97	36.31
	13 ETH/NOS	37.09	36.13	35.77	35.80	35.65	35.87	35.80	34.57	34.37	34.64	34.87	35.02
	14 ETH/NOS	36.56	36.83	36.54	36.18	36.27	36.22	36.33	35.84	36.01	35.57	35.30	35.70
	7 SAL/STR	37.39	38.10	37.93	38.36	38.28	38.00	37.78	37.52	37.19	37.06	37.09	37.00
	16 SAL/STR	36.85	37.40	37.52	37.46	37.21	36.60	36.59	36.69	36.64	36.40	36.45	36.45
	8 SAL/STR	36.04	36.87	36.94	37.08	36.94	36.57	36.52	36.31	36.18	36.18	36.25	36.17
	12 SAL/STR	36.43	36.57	37.02	37.39	37.21	37.17	37.17	37.26	37.11	37.38	37.62	37.64
	21 SAL/STR	36.89	35.92	35.61	35.69	35.63	35.52	35.81	36.36	36.57	36.52	36.60	36.67
	19 SAL/STR	37.77	38.45	38.32	38.19	37.84	37.90	37.66	37.84	37.54	37.59	37.57	37.27
	5 SAL/NOS	36.37	37.02	37.29	37.07	36.78	36.47	36.51	36.57	36.64	36.75	36.84	36.79
	4 SAL/NOS	36.30	37.09	37.60	37.31	37.05	36.87	36.82	36.81	36.77	36.73	36.81	36.82
	22 SAL/NOS	36.76	37.32	37.80	37.71	37.06	36.95	37.00	37.03	36.96	36.94	36.95	36.87
	23 SAL/NOS	36.64	37.04	37.53	37.38	37.17	37.09	37.18	37.22	37.00	37.11	37.25	37.31
	15 SAL/NOS	36.51	37.42	37.60	37.59	37.14	36.97	36.88	36.79	36.84	36.83	36.70	36.72
	3 SAL/NOS	36.52	36.97	37.53	37.73	37.47	37.26	37.03	36.88	36.86	36.73	36.78	36.77

Chapter 2 -- Replication of Cunningham and Bischof (1987)

DAY TWO

SUBJ	COND	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
1	ETH/STR	36.61	36.34	36.02	35.95	36.21	36.15	36.20	35.85	35.90	36.11	36.29	36.20
13	ETH/STR	36.53	36.43	36.37	35.50	34.94	34.83	35.09	35.02	34.69	34.64	34.80	34.92
24	ETH/STR	37.05	36.60	36.01	35.95	36.28	35.88	36.10	35.85	36.14	36.44	36.67	36.87
2	ETH/STR	36.62	36.49	36.48	35.76	35.48	34.73	34.78	34.83	35.01	35.35	35.79	35.85
6	ETH/STR	36.65	36.53	35.97	35.23	35.36	35.10	35.01	35.38	35.68	35.82	35.94	35.93
14	ETH/STR	36.77	36.21	35.56	35.23	35.12	35.19	35.62	35.64	35.81	36.13	36.41	36.06
17	ETH/NOS	36.97	36.98	36.90	36.67	36.69	36.55	36.17	36.06	36.13	36.15	36.17	36.20
20	ETH/NOS	37.99	38.14	38.08	37.96	37.83	37.79	37.78	37.83	37.88	37.91	37.86	37.81
10	ETH/NOS	36.55	37.12	37.32	36.92	36.83	36.91	37.03	36.94	37.04	37.13	37.24	37.37
9	ETH/NOS	36.78	37.03	36.95	36.89	37.09	36.73	36.75	36.90	36.26	36.42	36.19	36.56
11	ETH/NOS	36.98	36.67	36.43	36.12	36.30	36.01	36.34	36.59	36.81	36.78	36.20	36.43
18	ETH/NOS	36.68	35.79	34.69	34.48	34.49	34.42	34.39	34.27	34.42	34.45	34.52	34.70
5	SAL/STR	36.26	36.54	36.77	36.91	36.81	36.70	36.90	36.71	36.85	36.94	36.99	36.76
15	SAL/STR	36.76	37.04	37.35	37.72	37.42	37.22	36.86	36.87	36.90	37.06	37.09	36.84
4	SAL/STR	36.71	37.37	37.51	37.26	36.93	36.92	36.85	36.79	36.75	36.72	36.76	36.75
22	SAL/STR	36.37	37.24	37.19	37.22	37.02	36.85	36.86	36.74	36.79	36.80	36.89	36.80
3	SAL/STR	37.36	37.95	37.89	37.88	38.00	38.03	37.88	37.98	37.87	37.78	37.57	37.53
23	SAL/STR	36.73	37.22	37.42	37.45	37.17	37.01	37.24	36.94	37.04	37.09	37.18	37.17
21	SAL/NOS	36.88	37.22	37.69	37.41	37.23	37.17	37.19	37.20	37.14	37.02	36.97	36.88
8	SAL/NOS	36.45	37.04	37.05	36.74	36.69	36.79	36.92	36.78	36.73	36.61	36.66	36.57
16	SAL/NOS	36.74	37.45	37.21	36.82	36.80	36.61	36.57	36.53	36.64	36.64	36.64	36.54
19	SAL/NOS	37.34	38.16	38.08	37.78	37.78	38.03	37.81	37.69	37.05	36.81	36.70	36.70
7	SAL/NOS	37.61	38.16	37.96	37.51	37.20	36.96	36.94	36.98	36.70	36.80	36.70	36.61
12	SAL/NOS	36.47	36.75	37.13	37.22	36.99	36.63	36.88	37.05	36.99	36.97	36.95	37.24

Chapter 2 -- Replication of Cunningham and Bischof (1987)

DAY THREE

SUBJ	COND	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
15	ETH/STR	36.25	36.18	36.15	36.18	36.25	35.95	36.07	36.01	36.11	36.48	36.66	36.77
23	ETH/STR	36.79	36.54	36.10	36.17	36.52	36.23	35.93	35.50	35.55	35.89	36.13	36.14
3	ETH/STR	37.12	36.58	36.46	36.52	36.28	35.77	36.01	35.86	35.89	35.89	35.85	35.92
22	ETH/STR	36.63	36.28	36.32	35.68	35.89	36.17	36.33	36.45	36.59	36.92	37.07	36.54
4	ETH/STR	36.29	36.25	36.48	36.37	36.37	36.27	36.40	36.24	36.48	36.24	36.33	36.52
5	ETH/STR	36.08	36.27	36.35	35.91	35.81	35.51	35.58	35.67	35.76	35.99	36.06	36.12
16	ETH/NOS	36.59	36.29	35.90	35.87	35.86	36.00	36.11	36.19	35.91	35.97	36.26	36.34
12	ETH/NOS	36.35	36.48	36.03	36.24	36.09	36.06	36.14	36.29	36.58	36.72	36.89	36.98
7	ETH/NOS	36.92	36.80	36.16	35.98	36.05	36.15	36.04	35.66	36.04	36.29	36.32	36.30
8	ETH/NOS	36.60	36.35	36.10	36.34	36.21	36.25	36.33	36.49	36.40	36.49	36.54	36.60
21	ETH/NOS	37.22	36.84	36.54	36.39	36.12	36.05	36.15	36.31	36.44	36.51	36.42	36.05
19	ETH/NOS	37.77	37.13	36.57	36.29	36.31	36.25	36.18	36.19	36.27	36.38	36.44	36.37
6	SAL/STR	36.67	37.27	37.35	37.49	37.36	37.39	37.31	37.04	36.94	36.94	36.99	36.99
2	SAL/STR	37.35	37.78	37.46	37.29	36.87	36.78	36.82	36.51	36.37	36.26	36.23	36.18
13	SAL/STR	36.11	35.92	35.75	35.86	35.88	35.97	36.14	36.14	36.24	36.34	36.36	36.69
1	SAL/STR	37.41	37.68	37.39	37.25	36.97	36.74	36.73	36.78	36.76	36.61	36.53	36.65
14	SAL/STR	36.92	37.31	37.68	37.72	37.61	37.36	37.16	37.01	37.01	37.01	36.91	36.75
24	SAL/STR	36.70	37.42	37.97	38.04	37.87	37.89	37.58	37.44	37.31	37.22	37.23	37.14
17	SAL/NOS	36.45	36.44	36.41	36.51	36.61	36.71	36.77	36.56	36.56	36.77	36.77	36.82
18	SAL/NOS	36.53	36.63	36.65	36.80	37.09	37.13	36.96	36.68	36.75	37.00	37.03	37.30
11	SAL/NOS	36.47	37.05	37.56	37.61	37.69	37.30	37.16	36.90	36.83	36.81	36.78	36.76
10	SAL/NOS	36.36	36.97	37.34	37.36	37.33	37.08	37.05	37.03	37.06	37.03	37.08	37.16
9	SAL/NOS	36.60	36.82	37.20	37.36	37.15	36.96	36.92	36.96	37.08	37.16	37.00	36.92
20	SAL/NOS	38.15	38.40	38.53	38.33	38.20	38.19	38.29	38.15	38.11	38.08	38.01	38.02

Chapter 2 – Replication of Cunningham and Bischof (1987)

DAY FOUR

SUBJ	COND	T1	T2	T3	T4
12	ETH/STR	36.68	36.58	36.18	36.16
19	ETH/STR	37.68	37.33	36.74	36.19
21	ETH/STR	37.04	37.32	36.92	36.80
16	ETH/STR	36.13	36.34	36.05	35.71
8	ETH/STR	36.30	36.43	36.61	35.87
7	ETH/STR	36.35	36.00	35.85	35.80
23	ETH/NOS	37.06	37.36	37.12	36.94
3	ETH/NOS	37.38	36.61	36.26	36.06
15	ETH/NOS	36.43	36.55	36.68	36.70
5	ETH/NOS	36.13	36.43	36.53	36.29
4	ETH/NOS	37.06	36.49	35.94	35.79
22	ETH/NOS	36.46	36.39	36.19	36.23
9	SAL/STR	36.37	37.08	37.63	37.77
18	SAL/STR	36.09	36.44	36.72	37.04
17	SAL/STR	37.25	37.14	37.18	37.28
11	SAL/STR	36.53	36.86	37.24	37.56
20	SAL/STR	38.06	38.22	38.14	38.21
10	SAL/STR	36.29	36.89	36.82	36.53
6	SAL/NOS	36.79	37.30	37.54	37.23
14	SAL/NOS	36.66	36.76	37.06	37.02
2	SAL/NOS	37.34	37.56	37.30	37.57
13	SAL/NOS	36.38	36.11	36.14	36.44
1	SAL/NOS	37.15	37.60	37.58	37.34
24	SAL/NOS	36.98	36.70	37.61	37.94

T5	T6	T7	T8	T9	T10	T11	T12
36.31	36.48	36.64	36.61	36.68	36.54	36.55	36.68
36.13	35.88	35.95	36.03	36.25	36.15	36.21	36.16
36.71	36.50	36.43	36.39	36.30	36.24	36.30	36.36
35.75	35.76	35.87	35.55	35.60	35.65	35.84	35.88
35.69	35.42	35.56	35.48	35.62	35.94	35.90	35.93
36.00	35.41	35.53	35.31	35.56	35.47	35.75	35.51
36.94	36.89	36.92	36.95	37.03	37.02	37.09	37.06
36.04	35.61	34.82	34.65	33.85	34.14	34.61	34.88
36.69	36.80	36.79	36.62	36.52	36.75	36.89	36.99
36.43	36.60	36.77	36.84	36.68	36.46	36.41	36.68
36.30	36.62	36.64	36.02	36.23	36.54	36.62	36.63
36.36	36.33	36.29	36.26	36.68	36.88	36.95	36.95
37.65	37.40	37.34	37.10	36.84	36.67	36.50	36.46
37.23	36.92	36.77	36.52	36.74	37.11	37.16	37.08
37.16	37.14	37.11	37.07	37.06	37.04	37.03	37.15
37.40	37.21	37.04	36.75	36.68	36.79	37.10	37.18
38.03	37.99	38.04	38.02	37.94	37.95	37.97	37.95
36.58	36.36	36.53	36.62	36.87	36.49	36.61	36.44
37.11	37.07	37.06	37.04	37.22	37.24	37.17	37.05
36.95	37.15	37.10	37.00	36.92	36.84	36.67	36.54
37.19	36.77	36.23	36.26	36.22	36.25	36.23	36.36
36.32	36.19	36.30	36.31	36.16	36.11	36.24	36.25
37.16	36.99	36.73	36.62	36.49	36.44	36.42	36.43
37.70	37.42	37.22	37.27	37.38	37.31	37.27	37.36

APPENDIX B

Raw data collected for Experiment 2, Chapter 3

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Pre - Tolerance Test Day

Slip Angles, Absolute Values										
Subj #	Group	Test	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
		Stimulus								
2	Eth	off	36	23	23	22	22	20	20	22
11	Eth	off	38	30	16	16	12	22	20	17
18	Eth	off	36	22	28	25	19	20	25	23
29	Eth	off	25	21	17	21	18	19	18	17
9	Eth	off	27	20	18	25	17	16	13	16
25	Eth	off	27	22	19	17	22	20	20	18
6	Eth	off	36	23	16	19	16	20	22	22
20	Eth	off	35	27	28	24	22	27	27	28
3	Eth	on	42	32	41	38	31	43	29	31
28	Eth	on	32	34	22	25	37	27	24	26
32	Eth	on	25	25	27	23	23	24	28	25
23	Eth	on	32	28	32	37	36	37	32	36
21	Eth	on	28	28	32	29	28	28	37	37
15	Eth	on	21	24	17	19	18	12	14	21
14	Eth	on	28	27	32	25	30	24	24	23
8	Eth	on	35	27	29	24	31	27	27	26
30	Sal	off	27	28	32	25	26	28	30	28
26	Sal	off	28	34	39	43	41	42	40	37
19	Sal	off	34	43	38	33	37	35	34	33
17	Sal	off	43	39	43	40	36	40	40	47
12	Sal	off	38	35	33	33	33	25	35	26
10	Sal	off	38	38	34	37	36	44	37	40
1	Sal	off	48	40	52	41	43	45	51	47
5	Sal	off	34	35	21	38	26	25	35	40
4	Sal	on	40	51	41	39	35	34	33	29
27	Sal	on	32	43	43	47	42	47	43	42
22	Sal	on	30	40	35	40	40	38	39	38
24	Sal	on	32	32	42	41	40	39	40	39
13	Sal	on	27	28	23	22	21	24	29	46
7	Sal	on	24	38	34	37	38	30	32	32
16	Sal	on	20	29	31	26	31	22	27	24
31	Sal	on	23	21	26	25	24	27	26	24

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 1

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	33	31	20	30	27	21	24	23
3	Eth	40	33	30	26	26	26	33	30
6	Eth	36	33	35	24	24	23	19	23
8	Eth	41	31	22	24	24	24	22	23
9	Eth	31	21	24	19	17	19	20	20
11	Eth	31	23	20	15	16	13	15	13
14	Eth	28	21	17	17	19	16	15	15
15	Eth	26	24	21	22	21	23	21	23
18	Eth	30	29	22	25	20	22	21	18
20	Eth	25	26	24	25	23	24	22	24
21	Eth	28	32	27	28	24	24	24	25
23	Eth	32	34	29	38	33	29	31	24
25	Eth	32	25	27	29	24	24	29	32
28	Eth	37	28	22	20	19	19	22	24
29	Eth	25	21	19	21	22	18	24	19
32	Eth	31	35	29	28	33	31	25	33
1	Sal	44	49	52	54	59	56	61	61
4	Sal	35	38	27	38	29	35	31	31
5	Sal	29	34	36	38	41	27	42	31
7	Sal	31	24	30	31	34	29	39	30
10	Sal	39	42	46	47	44	39	46	40
12	Sal	24	23	30	34	32	35	34	34
13	Sal	25	28	27	23	24	25	26	27
16	Sal	24	25	23	25	27	25	26	35
17	Sal	27	33	33	33	33	37	40	45
19	Sal	33	37	34	37	37	36	37	33
22	Sal	27	37	40	37	42	36	42	41
24	Sal	28	37	35	37	37	38	33	37
26	Sal	24	30	34	35	35	34	38	38
27	Sal	27	33	38	38	36	36	41	39
30	Sal	22	23	21	21	23	30	33	31
31	Sal	24	18	19	20	21	39	23	28

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 2

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	34	25	24	26	24	27	24	25
3	Eth	37	62	31	33	27	40	30	25
6	Eth	34	23	16	15	16	17	23	19
8	Eth	42	35	27	34	27	27	29	27
9	Eth	33	21	16	17	15	17	19	24
11	Eth	38	24	18	17	16	17	15	18
14	Eth	28	18	17	16	17	13	14	14
15	Eth	21	18	17	14	13	17	17	15
18	Eth	25	27	24	25	22	20	17	21
20	Eth	32	31	28	25	32	29	35	31
21	Eth	38	23	20	20	23	23	22	23
23	Eth	39	25	21	19	21	21	22	20
25	Eth	28	30	28	30	28	28	36	32
28	Eth	37	35	38	46	35	38	35	35
29	Eth	28	20	17	17	17	17	17	17
32	Eth	27	28	23	20	22	24	25	22
1	Sal	53	53	50	54	48	55	51	56
4	Sal	27	35	39	32	34	37	31	31
5	Sal	26	29	31	35	36	35	38	32
7	Sal	27	36	38	48	36	34	33	35
10	Sal	42	37	39	38	37	38	38	32
12	Sal	27	27	27	31	31	34	33	30
13	Sal	23	22	26	29	24	28	24	27
16	Sal	20	19	19	22	20	28	24	32
17	Sal	35	33	43	42	40	43	45	37
19	Sal	30	32	35	35	35	35	32	37
22	Sal	35	32	40	35	39	35	36	40
24	Sal	30	27	36	36	39	34	39	33
26	Sal	24	29	28	25	28	27	30	32
27	Sal	20	22	31	35	38	37	33	38
30	Sal	20	32	37	43	35	42	43	35
31	Sal	22	22	24	24	28	32	28	29

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
 Tolerance Development, Day 3
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	35	26	27	27	23	27	28	24
3	Eth	38	45	26	24	23	24	24	23
6	Eth	27	29	32	34	31	34	41	40
8	Eth	37	38	27	24	27	23	23	23
9	Eth	26	25	16	13	18	17	16	14
11	Eth	33	29	17	18	17	17	17	19
14	Eth	21	28	25	28	25	21	25	21
15	Eth	25	24	17	15	17	19	21	21
18	Eth	27	24	22	23	20	20	17	18
20	Eth	39	32	32	33	38	38	36	37
21	Eth	42	46	45	31	31	36	37	47
23	Eth	42	32	24	20	21	23	25	24
25	Eth	23	28	21	21	16	20	19	19
28	Eth	36	43	24	26	19	21	22	26
29	Eth	26	30	23	23	28	23	26	24
32	Eth	29	33	24	20	22	22	26	25
1	Sal	46	53	53	52	51	53	53	62
4	Sal	31	41	36	38	37	35	41	38
5	Sal	37	37	42	42	42	38	40	39
7	Sal	37	42	46	38	43	40	45	46
10	Sal	32	37	36	36	35	33	36	29
12	Sal	32	32	38	39	42	39	39	39
13	Sal	21	25	25	32	25	33	32	32
16	Sal	17	25	21	21	22	32	27	25
17	Sal	38	38	39	43	42	43	43	39
19	Sal	35	41	42	37	45	45	44	39
22	Sal	45	48	43	46	47	42	47	48
24	Sal	33	43	47	46	47	50	53	46
26	Sal	22	21	25	24	25	26	38	37
27	Sal	29	40	40	40	44	39	39	39
30	Sal	23	26	27	26	29	35	37	37
31	Sal	25	22	23	33	26	36	25	33

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 4

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	40	40	35	25	26	22	24	24
3	Eth	36	30	23	22	20	22	22	21
6	Eth	27	32	27	17	17	17	23	20
8	Eth	40	32	34	29	34	34	37	29
9	Eth	36	36	33	37	45	39	28	37
11	Eth	32	26	20	15	22	16	16	19
14	Eth	20	16	19	13	14	16	16	17
15	Eth	20	20	19	15	16	19	17	16
18	Eth	35	38	39	46	22	29	24	28
20	Eth	38	38	41	41	46	42	40	37
21	Eth	34	34	25	22	23	23	23	25
23	Eth	43	36	24	19	24	19	19	20
25	Eth	20	28	16	16	21	17	19	21
28	Eth	31	42	27	23	22	23	21	20
29	Eth	24	27	24	27	21	28	29	25
32	Eth	30	31	24	20	20	20	20	32
1	Sal	52	60	63	53	63	63	56	67
4	Sal	28	37	35	36	40	41	32	35
5	Sal	38	42	38	39	42	47	49	40
7	Sal	26	36	38	41	39	42	42	44
10	Sal	33	33	33	37	45	37	44	34
12	Sal	26	27	34	46	34	37	34	36
13	Sal	25	21	24	23	22	23	26	26
16	Sal	19	22	22	26	34	29	27	30
17	Sal	35	38	39	41	45	41	44	47
19	Sal	31	40	38	33	42	38	33	44
22	Sal	30	41	38	41	44	41	45	43
24	Sal	32	32	40	36	42	39	39	39
26	Sal	27	28	25	24	26	27	26	28
27	Sal	24	24	35	38	43	45	37	37
30	Sal	38	38	27	33	29	37	32	37
31	Sal	20	22	27	22	22	23	23	25

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 5

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	40	41	42	33	30	33	27	27
3	Eth	36	30	23	22	20	22	22	21
6	Eth	26	29	22	16	25	22	24	22
8	Eth	38	45	31	31	28	21	42	30
9	Eth	30	24	16	16	16	16	16	16
11	Eth	26	23	16	17	17	14	16	18
14	Eth	23	20	14	15	15	24	16	16
15	Eth	19	22	23	15	15	16	17	19
18	Eth	25	32	37	31	30	38	34	40
20	Eth	41	32	23	37	24	25	28	33
21	Eth	27	28	20	22	21	23	30	25
23	Eth	30	23	20	24	22	20	23	23
25	Eth	34	31	19	18	19	18	21	20
28	Eth	42	35	29	25	24	33	23	30
29	Eth	27	24	27	17	24	21	21	21
32	Eth	23	30	22	23	23	21	23	21
1	Sal	51	57	52	54	64	62	58	51
4	Sal	37	40	35	31	31	37	35	31
5	Sal	30	39	44	30	39	38	42	40
7	Sal	28	33	33	34	33	37	37	33
10	Sal	44	47	42	45	45	43	37	44
12	Sal	24	36	37	37	37	36	42	35
13	Sal	20	27	22	25	25	32	30	32
16	Sal	30	31	29	37	37	33	33	33
17	Sal	27	34	41	44	41	42	42	41
19	Sal	38	38	38	41	45	40	41	40
22	Sal	32	36	38	39	45	42	43	46
24	Sal	30	30	37	43	31	46	44	42
26	Sal	24	24	25	27	22	25	32	40
27	Sal	20	31	31	31	33	35	42	39
30	Sal	28	38	35	34	31	30	32	29
31	Sal	25	29	30	30	27	27	27	27

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 6

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	34	40	31	26	32	26	33	27
3	Eth	44	34	37	31	28	28	31	35
6	Eth	38	38	38	20	22	16	19	17
8	Eth	40	42	31	27	29	27	27	26
9	Eth	31	30	21	27	20	19	19	21
11	Eth	37	33	26	16	22	19	19	22
14	Eth	30	26	22	29	26	29	29	26
15	Eth	27	31	22	19	22	20	22	18
18	Eth	33	26	26	23	30	24	26	25
20	Eth	37	42	41	38	41	42	42	41
21	Eth	32	45	30	30	37	32	33	30
23	Eth	41	30	23	23	23	23	25	24
25	Eth	34	37	24	22	26	23	30	26
28	Eth	35	41	27	27	39	23	23	24
29	Eth	27	26	23	21	20	25	25	23
32	Eth	30	41	37	41	34	45	34	34
1	Sal	55	55	53	65	58	59	59	58
4	Sal	33	37	38	41	44	36	41	41
5	Sal	33	28	41	37	45	43	39	39
7	Sal	37	37	39	37	39	41	47	48
10	Sal	43	52	48	42	43	44	53	42
12	Sal	41	43	41	42	46	44	41	42
13	Sal	28	32	29	30	29	35	36	35
16	Sal	27	34	34	32	36	37	29	41
17	Sal	37	41	42	41	44	48	43	41
19	Sal	41	41	48	45	38	45	41	45
22	Sal	42	45	48	52	48	52	45	44
24	Sal	27	27	30	37	41	41	37	41
26	Sal	27	30	27	24	25	30	23	30
27	Sal	30	45	44	41	42	44	48	38
30	Sal	23	34	27	34	34	28	37	30
31	Sal	23	30	30	30	27	27	37	33

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 7

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	39	29	33	24	27	30	36	35
3	Eth	45	45	27	24	23	23	24	26
6	Eth	40	33	22	17	22	23	20	19
8	Eth	34	44	31	31	15	25	27	27
9	Eth	36	22	19	16	16	18	17	17
11	Eth	34	41	38	27	26	26	23	23
14	Eth	19	26	23	24	23	34	29	23
15	Eth	16	25	19	19	16	19	19	19
18	Eth	33	39	30	30	27	29	26	30
20	Eth	33	38	27	27	32	31	32	38
21	Eth	34	27	31	30	27	31	30	35
23	Eth	37	35	29	28	34	31	33	30
25	Eth	24	42	33	27	30	34	27	48
28	Eth	34	38	27	30	31	34	35	48
29	Eth	23	23	23	23	27	25	23	27
32	Eth	34	45	41	46	42	42	35	42
1	Sal	59	55	55	55	55	55	55	70
4	Sal	36	42	43	47	37	44	33	43
5	Sal	29	40	44	47	32	42	48	40
7	Sal	22	40	44	44	44	37	51	49
10	Sal	33	33	38	39	35	34	34	37
12	Sal	38	45	37	46	44	46	44	45
13	Sal	27	27	27	26	31	28	31	27
16	Sal	33	39	40	37	35	37	42	31
17	Sal	29	40	37	37	41	38	38	37
19	Sal	38	45	41	39	42	45	45	42
22	Sal	34	38	41	45	45	45	45	49
24	Sal	41	49	45	45	42	42	42	42
26	Sal	20	34	27	30	30	30	27	48
27	Sal	34	42	45	45	49	42	41	45
30	Sal	24	30	30	38	34	34	34	38
31	Sal	34	34	41	41	38	42	43	38

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 8

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	41	44	34	38	31	30	29	27
3	Eth	41	45	38	26	23	30	35	33
6	Eth	35	34	23	22	20	19	20	30
8	Eth	38	39	27	29	28	29	30	27
9	Eth	31	31	24	20	16	16	16	16
11	Eth	28	27	16	16	20	16	19	16
14	Eth	26	33	17	16	16	17	17	20
15	Eth	20	24	24	24	22	22	20	20
18	Eth	38	42	32	27	27	25	27	25
20	Eth	34	45	45	44	46	43	42	45
21	Eth	32	37	40	39	43	42	42	45
23	Eth	45	32	30	32	52	28	30	29
25	Eth	32	35	31	25	25	22	25	25
28	Eth	39	45	45	46	43	38	45	45
29	Eth	25	28	23	24	22	25	25	26
32	Eth	32	36	31	30	29	30	31	25
1	Sal	54	57	60	47	69	58	65	59
4	Sal	37	37	44	45	45	46	37	45
5	Sal	43	43	48	45	53	47	52	51
7	Sal	45	53	49	53	49	52	54	52
10	Sal	35	42	37	42	45	43	46	41
12	Sal	34	44	43	43	40	45	39	44
13	Sal	25	27	29	33	35	36	35	31
16	Sal	26	31	34	36	36	34	34	31
17	Sal	37	38	49	45	45	49	49	45
19	Sal	41	45	42	49	49	42	37	45
22	Sal	37	42	49	46	45	49	50	49
24	Sal	35	46	42	45	42	42	42	42
26	Sal	29	29	30	35	35	35	42	35
27	Sal	28	38	45	42	42	42	42	42
30	Sal	28	31	35	28	28	42	38	29
31	Sal	32	28	31	29	27	27	25	27

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
 Tolerance Development, Day 9
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	39	39	32	31	38	28	27	29
3	Eth	36	46	31	31	29	35	27	31
6	Eth	31	34	20	18	16	19	18	18
8	Eth	38	42	30	32	28	24	29	32
9	Eth	31	36	24	26	27	23	22	23
11	Eth	27	27	15	20	18	20	20	20
14	Eth	32	41	29	29	29	32	28	30
15	Eth	29	31	35	30	37	27	33	23
18	Eth	31	38	24	24	24	23	24	30
20	Eth	35	45	42	42	42	46	45	45
21	Eth	40	34	28	24	24	26	24	24
23	Eth	35	49	42	44	49	48	45	49
25	Eth	31	42	26	24	24	23	25	24
28	Eth	38	46	45	48	48	41	45	41
29	Eth	35	28	24	25	24	23	24	24
32	Eth	31	38	34	34	26	29	33	30
1	Sal	59	53	59	56	66	67	60	71
4	Sal	31	41	42	37	41	41	42	36
5	Sal	35	45	41	43	41	41	45	41
7	Sal	38	48	45	42	45	52	47	50
10	Sal	40	44	40	44	44	34	42	40
12	Sal	37	38	39	41	37	40	42	43
13	Sal	23	31	32	37	36	37	35	32
16	Sal	37	35	39	38	39	37	37	35
17	Sal	31	34	35	45	42	42	45	47
19	Sal	42	38	46	53	45	42	46	42
22	Sal	43	49	45	48	49	45	45	49
24	Sal	42	45	45	45	49	48	49	48
26	Sal	35	34	35	32	41	38	38	38
27	Sal	38	38	45	45	44	41	48	48
30	Sal	35	41	41	42	42	34	38	35
31	Sal	30	34	34	37	34	34	35	34

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 10

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	36	46	31	24	27	23	27	27
3	Eth	39	32	27	24	27	24	25	27
6	Eth	30	34	26	19	15	19	15	21
8	Eth	36	43	27	36	31	27	27	28
9	Eth	41	30	18	18	21	19	18	21
11	Eth	28	26	22	24	19	19	19	22
14	Eth	25	22	18	18	18	19	16	18
15	Eth	23	30	16	18	18	18	19	21
18	Eth	35	34	23	22	22	23	24	25
20	Eth	35	38	35	26	32	27	33	28
21	Eth	37	35	38	26	24	27	30	28
23	Eth	35	31	38	27	25	28	26	30
25	Eth	27	35	33	24	24	28	24	27
28	Eth	40	31	29	25	27	28	35	27
29	Eth	31	28	37	27	28	24	24	27
32	Eth	35	41	27	26	24	27	26	26
1	Sal	57	60	54	56	56	58	69	52
4	Sal	37	36	36	37	39	38	36	34
5	Sal	40	49	45	41	41	43	59	50
7	Sal	38	45	46	37	49	49	48	51
10	Sal	41	43	46	40	46	41	40	41
12	Sal	40	41	42	44	45	42	42	39
13	Sal	26	26	33	32	41	28	30	37
16	Sal	34	35	32	37	37	39	37	37
17	Sal	34	34	45	42	42	45	38	40
19	Sal	46	45	38	42	42	42	46	42
22	Sal	40	42	42	46	42	46	42	52
24	Sal	42	39	42	45	38	42	43	38
26	Sal	27	26	28	37	31	35	29	35
27	Sal	35	38	43	39	38	41	38	47
30	Sal	27	28	34	33	38	42	24	41
31	Sal	25	24	38	27	28	31	24	30

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 11

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	38	41	46	34	24	36	34	31
3	Eth	46	44	44	38	48	36	36	44
6	Eth	23	22	16	18	16	23	23	18
8	Eth	44	42	38	31	31	35	31	31
9	Eth	30	30	17	20	17	19	20	18
11	Eth	23	23	28	26	22	20	19	21
14	Eth	28	30	22	20	18	18	19	19
15	Eth	25	26	22	27	29	26	23	23
18	Eth	33	34	30	27	37	25	30	29
20	Eth	37	34	30	27	28	31	32	35
21	Eth	30	45	42	51	46	42	41	38
23	Eth	34	61	28	28	28	38	31	34
25	Eth	31	35	29	27	37	28	27	30
28	Eth	40	35	27	27	28	27	28	31
29	Eth	28	43	28	28	28	38	30	29
32	Eth	27	35	27	31	27	27	26	27
1	Sal	57	65	55	53	52	55	67	71
4	Sal	40	42	42	41	41	45	43	44
5	Sal	22	39	41	37	42	45	45	45
7	Sal	33	41	41	45	41	45	46	45
10	Sal	40	45	47	50	46	49	46	43
12	Sal	39	42	44	45	48	48	50	48
13	Sal	31	33	37	33	33	34	32	38
16	Sal	30	27	30	34	38	34	37	37
17	Sal	30	33	43	45	43	41	41	44
19	Sal	44	41	37	41	45	45	48	48
22	Sal	45	50	49	49	50	50	50	50
24	Sal	38	46	42	42	46	42	43	45
26	Sal	27	38	35	35	33	35	39	35
27	Sal	35	36	39	42	45	46	49	46
30	Sal	28	32	33	30	38	38	31	27
31	Sal	22	24	34	28	30	30	28	31

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 12

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	38	45	38	31	27	38	30	27
3	Eth	29	39	38	33	35	42	31	29
6	Eth	38	34	27	30	24	22	26	30
8	Eth	31	45	35	28	28	29	28	30
9	Eth	40	38	22	22	20	15	22	21
11	Eth	31	29	25	19	22	26	20	28
14	Eth	29	37	22	20	22	21	20	19
15	Eth	23	30	30	30	25	23	24	26
18	Eth	37	45	44	47	50	46	45	45
20	Eth	40	45	36	31	37	37	34	35
21	Eth	34	41	27	27	30	30	32	34
23	Eth	48	37	35	29	30	35	33	37
25	Eth	37	48	47	49	49	52	48	46
28	Eth	38	45	47	44	37	41	36	38
29	Eth	30	34	34	33	30	31	33	34
32	Eth	30	40	27	30	26	28	31	30
1	Sal	64	71	71	72	75	60	73	64
4	Sal	34	42	43	45	46	44	45	44
5	Sal	36	42	46	53	56	49	48	45
7	Sal	45	55	45	45	54	47	55	58
10	Sal	49	49	48	51	51	47	50	46
12	Sal	41	51	44	49	54	50	45	48
13	Sal	29	38	34	36	32	40	44	36
16	Sal	35	38	38	38	37	38	43	40
17	Sal	33	38	45	50	52	48	49	51
19	Sal	42	49	45	49	45	46	47	53
22	Sal	47	52	53	52	53	52	49	53
24	Sal	34	42	38	41	45	41	48	49
26	Sal	30	41	30	45	43	45	46	43
27	Sal	37	52	49	49	52	49	52	52
30	Sal	31	41	44	40	37	39	37	37
31	Sal	40	40	40	44	44	37	44	41

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 13

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	44	46	29	36	28	35	30	26
3	Eth	26	29	27	24	25	25	28	28
6	Eth	40	29	22	23	22	23	22	21
8	Eth	35	46	36	38	33	35	35	37
9	Eth	34	25	20	22	20	20	21	19
11	Eth	29	29	21	22	19	21	21	20
14	Eth	29	35	20	19	18	18	16	20
15	Eth	25	30	21	21	19	21	20	27
18	Eth	30	30	26	24	27	28	24	26
20	Eth	37	41	27	27	27	26	27	26
21	Eth	31	37	47	39	37	44	40	44
23	Eth	37	43	47	40	41	38	40	41
25	Eth	26	37	33	40	33	37	33	30
28	Eth	38	37	30	26	30	28	30	34
29	Eth	30	37	33	34	33	33	37	37
32	Eth	37	48	30	30	27	28	27	27
1	Sal	71	67	65	76	59	65	73	59
4	Sal	41	50	44	45	43	44	42	41
5	Sal	42	40	52	47	47	51	50	50
7	Sal	45	47	41	51	52	50	45	51
10	Sal	47	51	48	43	47	46	51	51
12	Sal	44	48	48	55	51	53	52	57
13	Sal	24	42	33	36	35	37	33	39
16	Sal	33	28	37	33	33	35	37	41
17	Sal	30	31	40	41	42	44	44	44
19	Sal	41	38	41	44	40	44	42	40
22	Sal	47	50	48	44	50	53	52	55
24	Sal	40	47	40	40	48	41	45	42
26	Sal	33	40	33	37	37	31	40	40
27	Sal	34	40	47	44	44	47	48	52
30	Sal	30	35	38	37	35	41	44	47
31	Sal	33	48	47	42	47	52	44	40

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 14

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	48	42	35	27	29	27	31	35
3	Eth	40	39	33	31	30	28	27	27
6	Eth	37	31	26	22	23	20	23	22
8	Eth	32	35	30	26	32	28	29	27
9	Eth	34	20	20	26	20	23	27	20
11	Eth	25	25	23	23	19	20	22	24
14	Eth	29	36	30	30	22	22	23	20
15	Eth	23	27	20	20	22	19	20	22
18	Eth	35	31	23	24	24	24	27	24
20	Eth	41	41	45	45	41	46	43	41
21	Eth	31	32	25	28	26	28	30	31
23	Eth	36	31	27	27	27	27	27	30
25	Eth	38	42	36	42	39	32	36	42
28	Eth	37	50	34	30	29	29	32	31
29	Eth	25	28	26	24	26	27	28	28
32	Eth	28	40	31	29	27	31	30	29
1	Sal	63	67	60	57	67	65	63	57
4	Sal	32	46	40	37	45	42	45	42
5	Sal	35	49	48	47	40	45	47	44
7	Sal	42	45	51	51	48	51	47	55
10	Sal	41	47	45	45	53	51	48	44
12	Sal	51	47	51	45	54	54	52	55
13	Sal	33	36	39	36	37	39	36	36
16	Sal	32	36	32	32	32	34	31	34
17	Sal	34	37	35	41	41	38	45	41
19	Sal	29	42	45	45	46	48	48	48
22	Sal	45	45	52	52	51	52	53	56
24	Sal	41	48	48	48	48	45	49	45
26	Sal	27	29	30	39	31	37	35	38
27	Sal	38	48	45	41	42	45	39	46
30	Sal	28	30	41	36	31	33	31	31
31	Sal	35	42	40	38	38	38	38	37

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 15

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	45	49	52	45	41	38	34	33
3	Eth	38	39	29	24	29	27	28	28
6	Eth	41	40	24	21	24	23	22	21
8	Eth	30	41	24	26	24	24	28	24
9	Eth	34	43	24	30	22	23	29	22
11	Eth	25	36	26	24	22	21	223	22
14	Eth	37	41	26	26	24	32	29	40
15	Eth	30	35	21	22	20	21	22	24
18	Eth	38	37	41	48	48	46	48	41
20	Eth	32	43	41	45	42	45	41	39
21	Eth	41	46	34	31	29	29	35	32
23	Eth	45	47	48	44	45	44	48	46
25	Eth	27	34	29	29	26	28	28	34
28	Eth	41	42	42	33	30	31	29	30
29	Eth	31	31	28	28	28	28	29	30
32	Eth	50	27	37	32	32	32	35	32
1	Sal	63	59	67	55	59	55	57	64
4	Sal	38	40	49	48	42	46	46	44
5	Sal	36	47	48	52	48	45	48	47
7	Sal	52	48	56	56	52	51	54	58
10	Sal	44	44	46	51	48	48	44	51
12	Sal	53	51	57	51	53	55	56	55
13	Sal	26	33	35	34	41	38	41	35
16	Sal	32	37	39	37	39	44	46	44
17	Sal	27	34	40	45	45	46	45	48
19	Sal	38	37	41	48	48	46	48	41
22	Sal	45	52	52	53	55	53	60	57
24	Sal	52	52	45	52	52	52	52	52
26	Sal	27	38	33	36	35	35	45	37
27	Sal	29	45	46	48	45	49	48	42
30	Sal	28	31	35	38	35	35	38	42
31	Sal	27	38	38	32	35	32	35	35

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 16

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	49	49	33	31	34	26	34	33
3	Eth	29	31	27	27	27	26	26	27
6	Eth	35	36	30	24	23	23	23	26
8	Eth	32	39	31	30	30	28	29	30
9	Eth	45	46	41	37	31	26	24	24
11	Eth	30	28	29	27	25	24	26	26
14	Eth	26	24	24	27	26	27	24	26
15	Eth	36	41	33	32	34	37	35	37
18	Eth	37	41	31	29	28	55	53	31
20	Eth	38	41	38	36	34	33	34	33
21	Eth	31	45	41	51	37	39	40	36
23	Eth	37	34	30	29	30	31	31	38
25	Eth	37	48	32	32	31	35	38	34
28	Eth	52	41	35	33	31	33	33	33
29	Eth	31	28	30	31	30	31	31	31
32	Eth	27	42	28	31	31	30	33	31
1	Sal	67	70	63	70	73	69	70	68
4	Sal	41	47	48	49	47	52	49	50
5	Sal	47	45	50	49	45	52	51	49
7	Sal	32	52	45	48	47	48	48	51
10	Sal	39	50	47	51	47	47	49	48
12	Sal	55	51	56	57	55	58	61	60
13	Sal	37	39	33	43	44	41	45	37
16	Sal	29	34	34	36	39	38	40	42
17	Sal	37	45	50	52	48	45	59	45
19	Sal	34	32	41	47	45	45	45	46
22	Sal	47	52	55	52	52	59	52	57
24	Sal	50	48	52	49	52	52	59	52
26	Sal	24	34	30	31	28	34	34	34
27	Sal	44	45	48	49	48	49	39	45
30	Sal	28	31	31	31	41	34	41	38
31	Sal	31	31	38	35	34	37	32	35

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
 Tolerance Development, Day 17
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	47	46	49	33	34	32	34	29
3	Eth	43	41	38	35	29	30	28	27
6	Eth	37	39	34	29	24	24	28	26
8	Eth	31	34	39	32	32	28	26	31
9	Eth	27	21	19	25	21	20	24	22
11	Eth	25	30	24	21	21	23	25	24
14	Eth	29	27	24	26	26	23	21	26
15	Eth	33	34	25	23	24	26	24	25
18	Eth	41	38	31	32	27	31	34	35
20	Eth	24	35	34	35	34	34	34	34
21	Eth	34	49	49	45	47	41	39	37
23	Eth	41	38	31	31	31	32	35	41
25	Eth	27	43	41	46	33	33	35	30
28	Eth	41	37	32	34	32	36	34	34
29	Eth	34	38	32	29	30	29	32	30
32	Eth	30	32	37	30	30	30	30	30
1	Sal	66	63	68	69	62	64	68	62
4	Sal	41	46	44	49	47	48	44	48
5	Sal	47	48	52	48	50	44	47	56
7	Sal	41	44	50	44	47	49	48	55
10	Sal	47	47	47	47	51	44	46	43
12	Sal	54	58	58	61	61	47	56	59
13	Sal	36	36	36	38	44	37	44	40
16	Sal	36	38	34	37	40	37	37	38
17	Sal	31	45	45	45	48	48	50	45
19	Sal	45	41	45	38	36	48	38	52
22	Sal	58	45	45	38	42	45	55	53
24	Sal	41	48	45	47	49	50	52	52
26	Sal	31	39	33	34	40	34	36	34
27	Sal	35	47	48	48	42	47	45	42
30	Sal	28	35	43	33	48	42	38	34
31	Sal	38	46	47	47	51	48	48	48

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
 Tolerance Development, Day 18
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	37	51	41	32	33	46	32	47
3	Eth	43	30	32	30	32	29	32	31
6	Eth	40	48	26	27	25	23	30	26
8	Eth	28	43	37	27	29	25	28	27
9	Eth	44	48	37	38	35	37	28	31
11	Eth	31	37	31	24	26	23	26	24
14	Eth	27	25	22	24	24	23	22	22
15	Eth	24	37	35	36	27	38	29	27
18	Eth	41	44	30	27	30	37	28	31
20	Eth	23	35	34	34	32	30	32	32
21	Eth	45	44	34	30	34	30	30	32
23	Eth	37	44	32	34	35	41	34	35
25	Eth	37	48	43	42	39	38	38	40
28	Eth	48	46	36	37	36	36	37	36
29	Eth	28	35	33	32	32	28	30	31
32	Eth	35	39	42	39	35	35	35	32
1	Sal	59	62	63	62	66	64	66	66
4	Sal	47	50	49	47	47	51	44	51
5	Sal	41	44	46	41	43	46	50	51
7	Sal	51	52	48	48	54	55	54	51
10	Sal	38	45	41	43	42	40	42	35
12	Sal	50	48	55	46	56	52	52	55
13	Sal	26	28	27	34	33	31	31	37
16	Sal	36	37	44	37	32	37	38	37
17	Sal	30	35	41	41	43	41	41	48
19	Sal	31	41	41	34	41	44	41	44
22	Sal	47	55	51	55	55	55	55	55
24	Sal	45	48	48	51	52	52	51	52
26	Sal	38	43	35	38	48	38	40	38
27	Sal	54	50	49	47	43	47	45	43
30	Sal	28	38	35	42	35	39	35	39
31	Sal	32	49	35	35	35	35	39	32

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 19

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	42	51	44	42	36	42	42	40
3	Eth	40	52	43	35	33	35	35	39
6	Eth	34	44	53	23	25	28	26	25
8	Eth	24	33	26	31	31	22	22	23
9	Eth	24	30	25	27	24	21	24	23
11	Eth	33	35	26	25	25	25	23	26
14	Eth	27	32	23	25	23	24	20	21
15	Eth	32	28	23	27	27	24	26	25
18	Eth	36	44	32	31	30	32	30	32
20	Eth	21	35	36	37	37	38	38	38
21	Eth	37	36	32	29	30	30	31	32
23	Eth	42	42	32	35	42	35	38	36
25	Eth	27	35	29	31	30	34	31	31
28	Eth	38	49	42	32	34	34	34	31
29	Eth	31	28	28	28	27	28	30	31
32	Eth	31	38	35	36	31	29	31	28
1	Sal	60	65	56	63	67	67	71	71
4	Sal	41	38	41	43	41	44	44	42
5	Sal	40	42	44	44	41	41	44	46
7	Sal	47	44	46	46	44	49	55	50
10	Sal	52	48	46	45	43	45	42	41
12	Sal	50	53	55	57	57	55	54	57
13	Sal	26	33	35	34	36	44	34	38
16	Sal	35	34	38	35	35	35	31	31
17	Sal	41	39	45	42	49	45	45	45
19	Sal	31	34	38	38	39	40	42	45
22	Sal	50	50	53	57	53	59	57	57
24	Sal	49	53	53	53	53	53	50	49
26	Sal	29	35	31	35	28	31	42	38
27	Sal	38	45	45	45	45	42	38	42
30	Sal	30	31	35	35	35	42	31	42
31	Sal	28	38	31	31	31	31	31	32

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 20

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	47	49	47	37	35	30	35	32
3	Eth	37	51	33	32	31	31	31	33
6	Eth	42	37	32	26	25	23	25	27
8	Eth	35	31	31	27	27	27	27	28
9	Eth	30	37	26	26	29	26	29	29
11	Eth	27	29	28	26	25	23	23	26
14	Eth	28	37	23	23	21	21	23	23
15	Eth	35	37	27	27	28	28	27	29
18	Eth	40	42	34	32	32	36	36	37
20	Eth	28	36	39	35	36	36	37	33
21	Eth	35	39	34	33	32	31	37	35
23	Eth	39	47	47	46	39	49	34	39
25	Eth	28	38	31	28	32	31	31	31
28	Eth	35	52	52	48	48	48	48	45
29	Eth	27	31	28	28	28	32	29	28
32	Eth	41	35	32	30	31	32	32	36
1	Sal	61	56	62	70	70	71	66	71
4	Sal	45	49	46	44	46	44	44	48
5	Sal	36	44	51	43	44	44	54	44
7	Sal	41	41	48	49	42	51	44	38
10	Sal	54	51	53	47	51	47	54	46
12	Sal	46	51	50	53	54	52	47	51
13	Sal	33	40	37	37	41	33	40	45
16	Sal	37	39	37	37	47	40	40	38
17	Sal	34	41	44	45	45	50	43	46
19	Sal	32	28	39	35	39	43	39	35
22	Sal	42	49	50	55	54	59	53	57
24	Sal	47	50	53	50	53	50	50	50
26	Sal	31	31	35	28	31	31	37	38
27	Sal	31	41	45	41	48	45	45	42
30	Sal	28	32	32	37	31	36	31	32
31	Sal	31	35	35	34	38	34	38	34

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 21

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	45	46	36	33	32	32	32	30
3	Eth	42	40	32	32	30	32	30	33
6	Eth	40	46	27	27	22	23	26	27
8	Eth	35	31	31	27	27	27	27	28
9	Eth	25	25	25	31	26	23	26	25
11	Eth	25	26	24	24	22	24	23	21
14	Eth	27	36	22	24	24	22	22	24
15	Eth	26	35	27	23	25	27	24	25
18	Eth	37	45	47	42	40	35	36	34
20	Eth	24	41	36	41	35	38	33	35
21	Eth	32	36	32	29	34	29	32	33
23	Eth	32	36	31	29	29	32	32	38
25	Eth	35	42	32	30	30	31	34	32
28	Eth	49	46	45	45	42	42	42	45
29	Eth	25	32	34	29	29	30	32	29
32	Eth	36	30	32	33	32	36	36	30
1	Sal	62	62	69	66	70	62	66	62
4	Sal	37	41	40	39	47	40	44	44
5	Sal	48	51	54	51	44	44	55	44
7	Sal	44	37	39	41	41	44	44	48
10	Sal	46	47	46	46	45	46	46	46
12	Sal	51	49	50	59	50	49	53	46
13	Sal	24	62	28	28	34	33	31	38
16	Sal	38	33	38	38	31	38	35	34
17	Sal	35	38	38	41	42	45	45	41
19	Sal	38	41	43	41	41	41	41	45
22	Sal	39	47	47	50	50	51	55	57
24	Sal	43	47	50	49	51	53	53	57
26	Sal	30	35	32	38	36	31	35	39
27	Sal	29	35	48	38	45	49	46	43
30	Sal	25	32	33	36	33	32	32	37
31	Sal	33	33	33	33	39	32	36	32

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Development, Day 22

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	39	43	32	36	33	30	31	32
3	Eth	35	49	43	32	35	37	39	36
6	Eth	41	42	27	25	24	26	28	24
8	Eth	39	41	33	34	32	34	32	31
9	Eth	42	29	27	28	25	27	24	23
11	Eth	23	31	25	22	22	22	23	23
14	Eth	27	34	30	27	26	24	24	23
15	Eth	32	39	29	30	27	29	29	27
18	Eth	39	43	36	34	36	32	34	30
20	Eth	22	36	27	32	32	29	32	32
21	Eth	37	37	32	30	32	35	33	32
23	Eth	46	50	53	53	46	47	43	44
25	Eth	37	50	36	33	32	35	32	33
28	Eth	35	46	35	34	32	36	34	32
29	Eth	28	33	31	26	32	32	28	29
32	Eth	35	46	39	46	46	44	39	37
1	Sal	64	63	62	65	67	63	72	68
4	Sal	41	47	44	38	43	44	43	38
5	Sal	28	36	42	39	42	42	38	43
7	Sal	41	44	40	40	39	42	46	45
10	Sal	52	51	51	46	52	52	49	50
12	Sal	51	51	53	54	59	54	51	54
13	Sal	27	34	34	21	34	40	34	40
16	Sal	30	36	37	45	37	37	42	37
17	Sal	29	36	46	43	43	46	43	43
19	Sal	30	32	38	33	36	36	36	35
22	Sal	50	43	53	51	54	58	57	57
24	Sal	32	39	46	49	53	53	53	53
26	Sal	39	32	35	32	32	37	39	43
27	Sal	33	47	47	46	50	54	49	52
30	Sal	28	32	35	35	35	35	35	37
31	Sal	28	32	35	35	33	34	39	35

Chapter 3, Experiment 2 -- External Inhibition of Ethanol Tolerance
Tolerance Test Day

Subj #	Group	Test Stimulus	Slip Angles, Absolute Values							
			Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
32	Eth	off	31	34	34	36	40	29	31	36
11	Eth	off	20	27	27	25	25	25	24	25
18	Eth	off	39	43	53	50	40	37	36	36
2	Eth	off	37	49	47	42	37	41	39	37
14	Eth	off	34	38	36	31	30	28	28	34
25	Eth	off	27	38	26	22	22	26	24	25
21	Eth	off	32	47	38	31	31	33	31	29
3	Eth	off	42	51	36	32	35	32	31	32
8	Eth	on	41	40	30	27	27	27	27	30
29	Eth	on	35	28	25	22	21	20	21	25
15	Eth	on	29	33	21	26	24	23	20	26
23	Eth	on	34	36	31	27	29	27	28	33
9	Eth	on	25	27	23	24	22	18	20	20
6	Eth	on	47	39	28	24	23	24	26	30
28	Eth	on	50	49	53	48	53	53	53	46
20	Eth	on	24	26	27	23	25	25	24	24
31	Sal	off	28	27	24	22	20	19	19	17
22	Sal	off	30	43	40	32	38	45	35	38
26	Sal	off	27	34	14	22	22	19	17	19
1	Sal	off	68	56	61	48	45	52	41	45
13	Sal	off	28	26	23	19	21	23	24	25
4	Sal	off	44	30	30	27	23	25	26	27
12	Sal	off	56	29	23	24	26	27	24	26
17	Sal	off	32	32	24	23	24	21	23	22
19	Sal	on	24	24	20	17	20	21	17	17
5	Sal	on	34	27	31	45	25	28	25	25
30	Sal	on	32	27	20	17	20	17	19	17
10	Sal	on	51	45	55	31	35	38	25	31
7	Sal	on	45	36	40	42	42	44	41	37
27	Sal	on	40	35	28	25	20	20	21	25
24	Sal	on	39	35	34	22	21	20	24	22
16	Sal	on	32	27	20	23	19	20	25	23

APPENDIX C

Raw data collected for Experiment 1, Chapter 4

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 1

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	37	27	27	29	29	26	39	30
4	Eth	44	37	37	41	41	46	42	44
5	Eth	47	38	38	26	26	30	35	33
8	Eth	33	42	42	29	29	36	33	33
9	Eth	44	30	30	24	24	34	47	44
12	Eth	42	36	36	36	36	46	45	37
13	Eth	41	45	45	32	38	35	59	40
16	Eth	44	32	32	41	34	36	40	44
17	Eth	46	35	35	31	31	31	39	40
20	Eth	48	36	36	34	33	36	33	33
21	Eth	41	34	31	28	34	40	33	32
24	Eth	50	35	37	36	39	40	41	38
25	Eth	48	37	32	33	33	32	36	33
28	Eth	50	32	32	30	32	30	30	33
29	Eth	35	45	36	37	37	35	34	30
32	Eth	42	36	36	33	33	35	35	34
33	Eth	50	49	40	34	41	42	36	37
36	Eth	46	33	32	36	31	30	29	33
37	Eth	47	33	33	31	32	32	32	31
40	Eth	44	38	30	37	33	36	32	40
2	Sal	45	39	39	36	36	37	32	36
3	Sal	40	41	41	43	43	41	39	42
6	Sal	35	46	46	47	47	38	38	47
7	Sal	49	44	44	51	51	40	39	36
10	Sal	45	41	41	43	43	45	45	50
11	Sal	42	52	52	53	53	56	57	50
14	Sal	39	42	42	40	45	50	42	49
15	Sal	44	40	40	45	41	52	41	50
18	Sal	45	47	47	49	43	52	50	47
19	Sal	48	42	42	52	41	48	51	49
22	Sal	40	50	45	47	48	46	50	48
23	Sal	48	43	39	38	37	39	40	38
26	Sal	46	54	44	43	47	42	47	45
27	Sal	38	37	44	36	43	41	40	40
30	Sal	34	46	36	39	34	43	43	35
31	Sal	45	39	39	38	46	38	40	40
34	Sal	35	48	42	46	43	40	39	51
35	Sal	51	48	46	45	43	44	46	46
38	Sal	31	30	31	41	35	33	39	35
39	Sal	33	36	46	40	39	36	37	43

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 2

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	36	34	27	28	31	30	40	30
4	Eth	38	35	33	32	31	29	33	29
5	Eth	39	46	36	51	40	41	37	34
8	Eth	33	35	30	22	29	33	27	32
9	Eth	33	32	31	24	23	28	43	34
12	Eth	45	42	36	36	37	39	40	46
13	Eth	42	38	43	46	45	45	38	38
16	Eth	49	56	39	40	35	52	46	53
17	Eth	44	36	31	35	40	36	36	37
20	Eth	42	36	36	34	32	36	30	35
21	Eth	38	34	28	30	34	31	32	36
24	Eth	37	50	35	28	36	35	39	52
25	Eth	40	36	34	35	34	37	39	35
28	Eth	52	38	46	46	42	37	39	43
29	Eth	35	30	28	28	30	28	30	27
32	Eth	49	43	35	35	47	46	36	34
33	Eth	43	38	33	36	36	45	34	36
36	Eth	40	30	30	29	31	30	31	31
37	Eth	39	50	32	37	28	35	37	38
40	Eth	37	32	32	28	28	31	30	32
2	Sal	37	39	34	38	42	36	40	44
3	Sal	41	46	38	38	46	52	57	55
6	Sal	38	36	44	38	48	36	49	42
7	Sal	36	40	39	44	40	38	41	41
10	Sal	39	42	43	49	48	45	53	47
11	Sal	53	48	52	49	53	56	54	56
14	Sal	32	38	52	38	39	45	43	43
15	Sal	34	40	41	38	39	45	45	47
18	Sal	48	47	43	43	47	51	43	51
19	Sal	40	48	44	45	48	49	45	49
22	Sal	47	47	49	51	50	50	51	50
23	Sal	36	35	46	42	40	46	46	40
26	Sal	36	39	41	39	46	42	46	42
27	Sal	38	35	40	38	39	36	39	42
30	Sal	44	35	49	36	35	35	45	37
31	Sal	36	37	42	48	46	45	43	36
34	Sal	38	38	43	44	49	46	52	52
35	Sal	39	37	38	40	43	46	46	40
38	Sal	36	52	43	35	41	42	39	42
39	Sal	40	43	50	49	41	45	48	51

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 3

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	39	34	34	28	33	37	29	29
4	Eth	39	45	30	23	25	26	25	24
5	Eth	37	32	28	25	28	27	34	28
8	Eth	32	34	31	40	38	30	33	34
9	Eth	28	27	27	23	29	41	27	32
12	Eth	35	37	36	46	37	38	37	38
13	Eth	37	45	32	31	43	35	35	39
16	Eth	39	50	57	53	52	36	39	35
17	Eth	41	38	39	34	35	38	42	42
20	Eth	42	36	30	32	28	31	38	34
21	Eth	37	28	32	26	30	30	32	27
24	Eth	42	41	31	39	31	34	36	35
25	Eth	39	31	28	28	30	28	31	30
28	Eth	42	33	39	38	36	51	46	50
29	Eth	31	27	26	41	27	29	25	32
32	Eth	39	32	45	36	31	36	33	46
33	Eth	41	38	34	28	27	59	31	34
36	Eth	36	35	32	39	30	34	27	28
37	Eth	44	50	35	39	29	32	39	38
40	Eth	34	29	33	28	39	39	32	31
2	Sal	42	40	37	37	37	40	38	39
3	Sal	40	51	52	49	54	51	52	49
6	Sal	35	42	45	40	38	41	44	48
7	Sal	36	39	42	42	44	41	44	45
10	Sal	38	47	51	47	45	52	47	52
11	Sal	52	50	49	53	55	52	54	57
14	Sal	37	40	45	46	45	52	47	43
15	Sal	37	40	41	37	38	37	39	41
18	Sal	43	50	40	37	43	41	50	50
19	Sal	39	41	44	49	48	41	41	38
22	Sal	46	43	49	45	45	45	52	46
23	Sal	40	42	45	46	43	46	48	49
26	Sal	41	39	39	41	43	46	47	43
27	Sal	37	36	31	39	35	32	34	35
30	Sal	39	39	43	36	42	36	38	52
31	Sal	40	46	36	36	39	46	46	36
34	Sal	37	42	43	44	50	56	58	54
35	Sal	46	42	44	46	50	50	50	50
38	Sal	39	39	41	46	43	39	43	46
39	Sal	36	47	55	47	55	43	49	46

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 4

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	40	31	32	29	30	36	30	35
4	Eth	47	50	28	27	30	27	25	26
5	Eth	36	33	40	30	29	32	37	39
8	Eth	42	37	37	34	32	29	33	35
9	Eth	28	24	28	27	33	28	29	26
12	Eth	34	42	46	46	49	50	51	48
13	Eth	47	45	34	34	31	33	43	37
16	Eth	45	51	34	25	29	42	37	43
17	Eth	44	45	45	47	40	50	45	39
20	Eth	53	46	37	36	35	49	38	42
21	Eth	33	43	32	32	42	38	28	33
24	Eth	36	35	34	43	39	41	36	39
25	Eth	35	31	25	21	24	27	27	29
28	Eth	44	52	34	36	32	32	42	38
29	Eth	32	28	24	25	32	35	36	31
32	Eth	45	38	36	32	33	33	31	37
33	Eth	46	43	33	29	31	30	32	29
36	Eth	29	24	22	21	22	21	27	23
37	Eth	39	50	31	49	45	46	34	39
40	Eth	29	25	21	24	20	22	28	24
2	Sal	35	42	39	38	39	42	43	41
3	Sal	50	50	47	44	48	47	52	53
6	Sal	33	40	42	32	36	30	40	44
7	Sal	35	48	40	40	40	39	46	43
10	Sal	39	38	40	53	42	41	54	45
11	Sal	61	61	67	54	56	61	56	55
14	Sal	30	45	38	42	46	46	39	41
15	Sal	40	39	43	44	44	48	49	49
18	Sal	42	40	47	45	45	60	48	51
19	Sal	32	34	35	39	45	43	44	44
22	Sal	49	46	53	48	50	52	56	51
23	Sal	43	48	49	50	48	53	52	58
26	Sal	45	46	46	43	50	47	46	53
27	Sal	34	38	39	36	35	35	33	36
30	Sal	43	47	48	46	42	45	39	41
31	Sal	35	31	42	38	53	41	43	45
34	Sal	34	33	46	41	40	39	40	38
35	Sal	42	46	48	39	43	52	45	42
38	Sal	31	40	38	42	37	41	39	38
39	Sal	40	45	43	43	40	40	46	49

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 5
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	34	31	23	37	35	29	30	34
4	Eth	46	42	39	40	37	31	36	36
5	Eth	45	37	31	25	29	30	39	32
8	Eth	35	34	25	26	25	25	28	29
9	Eth	25	23	20	21	22	22	21	20
12	Eth	51	51	51	47	43	42	43	44
13	Eth	37	43	32	26	30	31	33	35
16	Eth	48	39	30	25	34	40	34	35
17	Eth	37	42	38	30	42	36	36	35
20	Eth	39	34	29	28	32	31	36	32
21	Eth	34	38	36	38	29	31	39	38
24	Eth	38	38	22	27	30	32	28	34
25	Eth	35	35	32	24	25	25	29	28
28	Eth	48	43	37	34	36	34	34	35
29	Eth	32	36	31	25	27	27	28	29
32	Eth	38	47	31	31	37	29	33	41
33	Eth	45	49	46	50	43	44	50	50
36	Eth	31	29	26	28	26	25	31	28
37	Eth	48	42	40	63	46	45	39	46
40	Eth	36	34	28	26	26	32	33	36
2	Sal	37	39	40	44	38	41	40	38
3	Sal	41	48	39	41	43	45	43	38
6	Sal	32	37	36	35	41	35	39	36
7	Sal	40	43	35	41	39	40	43	38
10	Sal	38	41	48	43	41	45	40	43
11	Sal	51	51	52	52	50	61	45	61
14	Sal	30	38	37	37	42	39	40	39
15	Sal	37	42	40	43	42	46	47	45
18	Sal	42	40	45	45	57	39	40	38
19	Sal	30	34	35	40	43	39	38	38
22	Sal	48	51	50	50	50	60	48	59
23	Sal	49	46	50	45	52	52	49	57
26	Sal	45	42	42	50	52	45	43	46
27	Sal	33	32	35	35	33	40	38	35
30	Sal	42	42	43	50	42	56	52	55
31	Sal	43	40	40	48	39	52	42	50
34	Sal	36	46	46	46	45	53	47	45
35	Sal	45	47	45	48	46	46	47	46
38	Sal	32	40	38	41	42	40	42	46
39	Sal	46	46	56	42	57	53	52	56

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 6

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	32	30	32	24	32	30	26	30
4	Eth	43	34	24	24	26	35	25	24
5	Eth	38	35	33	31	36	32	34	44
8	Eth	38	52	27	26	25	32	40	33
9	Eth	26	30	27	24	28	27	25	29
12	Eth	31	34	33	39	27	24	31	29
13	Eth	30	34	23	25	26	25	26	24
16	Eth	35	46	32	25	29	31	44	35
17	Eth	40	34	36	34	34	36	46	38
20	Eth	47	43	42	36	36	38	36	32
21	Eth	41	41	31	34	33	32	32	35
24	Eth	42	41	31	31	32	31	43	45
25	Eth	41	36	28	26	27	31	32	37
28	Eth	46	56	32	34	35	32	36	36
29	Eth	36	34	28	31	31	31	32	37
32	Eth	40	42	39	36	35	37	33	38
33	Eth	42	45	42	42	38	41	36	45
36	Eth	28	35	27	38	36	29	38	29
37	Eth	34	43	50	46	39	46	36	51
40	Eth	31	32	26	30	23	27	24	26
2	Sal	31	40	37	39	37	46	44	44
3	Sal	33	39	38	44	42	42	45	53
6	Sal	38	35	35	39	33	40	38	41
7	Sal	38	42	45	42	42	43	37	40
10	Sal	31	35	35	39	38	43	45	48
11	Sal	38	56	46	47	44	50	56	53
14	Sal	24	24	22	29	35	31	30	29
15	Sal	43	45	51	50	42	42	43	48
18	Sal	52	57	50	57	55	51	46	48
19	Sal	33	37	51	46	46	41	41	41
22	Sal	55	52	58	57	56	62	56	60
23	Sal	46	51	59	53	52	49	48	53
26	Sal	43	56	48	57	50	60	59	49
27	Sal	34	37	36	37	36	36	32	33
30	Sal	41	52	56	62	55	50	53	56
31	Sal	36	45	43	45	41	38	52	42
34	Sal	41	43	38	52	38	49	56	46
35	Sal	45	46	42	53	50	47	49	48
38	Sal	36	39	36	37	43	46	39	39
39	Sal	38	49	46	45	50	60	51	48

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 7

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	33	30	24	27	29	28	25	31
4	Eth	38	34	26	25	37	28	27	31
5	Eth	35	54	34	33	32	40	41	29
8	Eth	28	44	35	28	21	32	31	23
9	Eth	28	34	31	30	31	28	28	29
12	Eth	42	40	33	30	27	31	39	39
13	Eth	39	43	41	48	42	43	46	43
16	Eth	40	42	50	36	50	53	52	38
17	Eth	36	40	39	35	45	38	46	46
20	Eth	52	48	46	48	52	46	45	45
21	Eth	47	42	37	29	32	34	31	35
24	Eth	44	36	39	33	36	34	41	38
25	Eth	35	33	30	28	29	29	35	27
28	Eth	53	53	59	44	38	38	42	50
29	Eth	31	33	31	35	33	31	36	36
32	Eth	49	39	40	41	42	35	40	42
33	Eth	40	39	44	34	33	34	35	38
36	Eth	30	30	28	39	31	32	31	35
37	Eth	41	39	29	28	28	32	27	28
40	Eth	35	34	36	45	43	38	43	41
2	Sal	36	40	32	41	39	53	37	48
3	Sal	27	38	37	40	41	44	40	47
6	Sal	33	39	42	42	31	34	46	38
7	Sal	32	46	40	40	40	38	37	40
10	Sal	34	40	43	45	41	47	46	43
11	Sal	42	50	48	47	56	51	60	45
14	Sal	30	43	42	38	37	43	43	45
15	Sal	46	50	48	49	49	47	47	42
18	Sal	32	29	36	45	38	43	53	53
19	Sal	30	33	41	43	46	36	30	38
22	Sal	56	51	46	50	52	58	54	49
23	Sal	44	52	43	51	46	56	49	46
26	Sal	50	46	45	44	47	44	49	44
27	Sal	42	42	42	41	40	40	40	41
30	Sal	42	51	52	52	49	51	42	51
31	Sal	49	50	49	47	49	53	48	50
34	Sal	42	43	45	50	49	50	41	50
35	Sal	48	53	53	45	52	50	50	52
38	Sal	38	38	36	38	40	39	41	39
39	Sal	45	47	51	46	53	50	49	48

Chapter 4, Experiment 1 -- Test for Conditional Response
 Tolerance Development, Day 8
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	33	39	33	31	27	27	26	26
4	Eth	48	40	39	41	45	41	41	40
5	Eth	30	31	39	30	26	45	45	36
8	Eth	36	40	25	24	29	25	25	29
9	Eth	25	24	23	22	26	24	24	21
12	Eth	31	35	32	35	34	34	34	31
13	Eth	35	44	30	29	28	31	31	29
16	Eth	52	43	56	44	55	53	41	52
17	Eth	38	37	36	33	40	32	32	37
20	Eth	49	45	40	39	37	38	35	36
21	Eth	41	40	38	34	41	34	34	42
24	Eth	38	38	33	28	35	33	33	38
25	Eth	39	35	30	27	29	32	32	39
28	Eth	40	40	32	31	33	30	34	36
29	Eth	30	37	29	26	27	33	36	31
32	Eth	46	43	36	34	34	38	36	38
33	Eth	46	51	35	32	34	36	36	36
36	Eth	31	32	32	31	31	29	34	35
37	Eth	50	49	49	48	43	53	44	43
40	Eth	39	33	42	30	32	35	43	39
2	Sal	33	37	40	42	41	44	44	42
3	Sal	40	46	45	43	41	37	37	43
6	Sal	40	41	40	39	37	43	35	42
7	Sal	45	40	40	39	41	38	38	43
10	Sal	37	46	43	45	41	38	38	48
11	Sal	43	52	56	61	57	49	49	52
14	Sal	33	42	50	45	38	39	36	41
15	Sal	50	48	49	51	47	44	46	45
18	Sal	31	31	31	34	37	32	32	39
19	Sal	34	35	36	38	40	38	38	41
22	Sal	52	49	51	50	55	54	50	55
23	Sal	51	52	52	51	51	53	53	53
26	Sal	39	42	43	45	46	45	46	42
27	Sal	43	37	40	40	37	36	38	38
30	Sal	52	42	56	54	54	50	57	53
31	Sal	36	51	52	55	52	50	59	59
34	Sal	38	37	39	39	45	41	50	53
35	Sal	56	53	51	51	56	50	52	52
38	Sal	37	45	41	39	38	45	45	47
39	Sal	43	56	46	42	51	55	53	53

Chapter 4, Experiment 1 -- Test for Conditional Response
 Tolerance Development, Day 9
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	39	30	29	26	30	26	28	28
4	Eth	33	44	38	29	36	38	36	33
5	Eth	49	41	33	31	29	33	39	33
8	Eth	30	32	25	24	22	25	29	30
9	Eth	27	28	26	24	39	23	25	26
12	Eth	31	32	27	28	27	32	34	42
13	Eth	38	39	28	29	31	30	29	29
16	Eth	34	41	29	27	42	33	37	43
17	Eth	37	37	32	52	37	36	37	44
20	Eth	52	45	42	33	39	33	34	40
21	Eth	40	40	40	36	37	35	39	36
24	Eth	48	42	34	33	39	39	48	41
25	Eth	39	39	31	37	31	40	33	32
28	Eth	42	53	40	40	37	36	33	35
29	Eth	40	38	30	30	31	36	45	38
32	Eth	40	43	36	40	38	36	37	42
33	Eth	40	35	35	34	32	36	38	37
36	Eth	29	31	29	34	33	29	33	39
37	Eth	49	46	57	43	53	56	56	47
40	Eth	34	38	34	29	30	29	39	33
2	Sal	35	39	43	45	42	42	41	43
3	Sal	39	38	48	43	46	46	45	38
6	Sal	36	38	36	33	34	34	34	36
7	Sal	32	36	41	34	41	38	43	45
10	Sal	38	42	42	47	45	43	48	43
11	Sal	47	49	49	52	43	48	49	57
14	Sal	46	36	44	43	42	38	41	39
15	Sal	37	46	42	38	45	41	44	47
18	Sal	33	40	30	30	37	36	36	37
19	Sal	38	41	43	55	41	38	42	37
22	Sal	53	57	52	51	54	59	51	55
23	Sal	47	46	51	46	53	56	51	50
26	Sal	42	47	42	46	45	55	50	51
27	Sal	37	42	38	38	36	40	37	37
30	Sal	39	56	53	51	56	54	47	46
31	Sal	46	46	41	43	45	42	47	47
34	Sal	47	43	44	58	51	56	52	55
35	Sal	50	51	58	50	51	51	55	55
38	Sal	26	30	34	36	33	44	35	42
39	Sal	51	55	48	57	43	50	53	57

Chapter 4, Experiment 1 -- Test for Conditional Response
 Tolerance Development, Day 10
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	35	31	25	29	35	28	28	42
4	Eth	34	36	29	33	27	27	28	25
5	Eth	37	36	34	33	32	42	37	42
8	Eth	26	31	21	25	30	24	29	30
9	Eth	26	25	22	21	23	20	23	23
12	Eth	29	32	25	29	24	32	30	39
13	Eth	32	30	26	27	26	34	30	29
16	Eth	45	39	39	43	37	51	40	55
17	Eth	42	47	40	43	47	47	42	44
20	Eth	50	46	44	40	45	36	38	40
21	Eth	40	41	37	38	39	38	37	43
24	Eth	45	43	34	37	35	36	43	41
25	Eth	35	36	36	32	30	29	36	42
28	Eth	32	37	28	27	31	30	25	31
29	Eth	38	37	38	33	30	38	41	42
32	Eth	31	36	31	28	32	35	45	32
33	Eth	36	32	36	28	29	28	28	29
36	Eth	30	31	31	31	31	30	32	35
37	Eth	39	42	29	30	31	31	28	42
40	Eth	34	30	29	27	27	28	31	29
2	Sal	44	43	40	42	41	38	50	42
3	Sal	46	53	41	51	47	40	46	43
6	Sal	32	37	38	40	42	38	40	40
7	Sal	45	43	41	45	43	41	38	41
10	Sal	42	40	37	42	44	43	41	41
11	Sal	51	48	60	55	47	52	50	51
14	Sal	43	41	47	46	44	41	38	46
15	Sal	38	40	47	42	43	46	43	41
18	Sal	34	40	47	36	40	48	42	40
19	Sal	46	50	50	54	50	48	48	48
22	Sal	54	51	52	53	50	55	48	51
23	Sal	50	56	51	53	51	57	61	54
26	Sal	43	41	43	44	45	45	51	41
27	Sal	35	34	34	33	35	35	33	36
30	Sal	41	48	43	54	48	47	49	45
31	Sal	39	36	40	38	41	39	43	43
34	Sal	47	45	46	44	46	44	50	44
35	Sal	42	48	47	49	51	50	50	47
38	Eth	27	39	32	32	42	42	43	42
39	Sal	38	46	43	42	51	54	42	47

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 11

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	32	28	26	24	25	29	35	26
4	Eth	38	30	29	39	29	28	28	28
5	Eth	36	42	37	29	34	36	33	36
8	Eth	36	34	29	32	29	29	36	30
9	Eth	32	33	29	29	28	28	27	28
12	Eth	40	40	34	38	27	29	33	32
13	Eth	30	34	39	37	38	42	46	35
16	Eth	47	50	34	33	34	42	50	42
17	Eth	32	41	38	43	35	38	42	35
20	Eth	46	40	40	36	43	39	38	39
21	Eth	42	41	38	43	39	43	39	42
24	Eth	43	36	34	39	39	36	43	38
25	Eth	36	38	41	37	36	36	33	38
28	Eth	43	29	33	30	29	30	33	35
29	Eth	40	45	32	34	31	30	40	35
32	Eth	43	43	39	46	38	39	36	46
33	Eth	43	39	31	41	37	31	34	35
36	Eth	29	28	31	27	29	35	29	29
37	Eth	41	39	30	28	30	36	34	36
40	Eth	39	44	31	30	35	33	31	31
2	Sal	37	48	46	45	45	49	48	44
3	Sal	47	47	49	47	47	50	53	47
6	Sal	32	37	37	37	36	47	43	40
7	Sal	35	40	39	43	42	39	37	39
10	Sal	41	43	44	38	43	43	50	46
11	Sal	49	56	50	51	56	51	44	57
14	Sal	27	34	34	45	43	36	31	46
15	Sal	42	42	47	45	42	50	46	45
18	Sal	34	37	43	37	37	42	37	38
19	Sal	50	51	52	46	47	48	45	45
22	Sal	46	43	51	50	49	52	51	46
23	Sal	48	51	48	48	52	48	49	49
26	Sal	43	47	42	45	48	53	43	47
27	Sal	33	36	40	34	35	34	35	33
30	Sal	47	47	44	42	49	53	52	52
31	Sal	43	47	50	53	47	46	51	45
34	Sal	50	49	50	49	56	48	51	49
35	Sal	47	48	46	46	51	49	50	54
38	Sal	39	44	40	36	46	37	40	42
39	Sal	42	46	56	56	56	53	52	46

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 12

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	34	41	40	36	38	37	30	31
4	Eth	29	28	24	33	25	28	32	24
5	Eth	33	47	33	32	28	28	31	39
8	Eth	36	36	23	28	26	25	30	30
9	Eth	24	21	23	20	22	21	21	25
12	Eth	41	41	28	27	26	25	28	36
13	Eth	27	40	27	30	28	32	34	32
16	Eth	36	47	29	29	35	31	30	34
17	Eth	43	57	40	45	42	39	46	42
20	Eth	45	38	36	37	39	36	44	34
21	Eth	38	37	37	39	37	40	37	39
24	Eth	41	40	31	32	33	36	40	36
25	Eth	36	36	37	32	32	46	33	40
28	Eth	41	35	29	31	30	29	32	35
29	Eth	40	39	32	36	35	38	37	39
32	Eth	29	38	28	39	32	32	43	33
33	Eth	34	32	28	28	25	28	31	30
36	Eth	28	34	27	30	31	29	32	32
37	Eth	42	34	32	28	32	45	35	35
40	Eth	31	34	28	32	29	30	29	30
2	Sal	35	40	36	43	47	44	47	46
3	Sal	43	36	43	47	44	45	46	46
6	Sal	34	31	31	32	36	31	31	40
7	Sal	36	38	37	36	36	37	36	38
10	Sal	29	31	37	38	41	39	39	41
11	Sal	43	47	54	47	49	51	52	54
14	Sal	37	40	40	47	39	46	39	39
15	Sal	40	38	42	46	42	40	49	44
18	Sal	35	43	40	40	40	37	44	43
19	Sal	35	46	47	44	43	47	41	54
22	Sal	48	48	45	50	53	56	51	44
23	Sal	46	51	52	55	48	56	54	54
26	Sal	46	44	41	45	48	50	56	48
27	Sal	33	36	40	36	42	37	40	38
30	Sal	48	54	50	52	51	50	55	53
31	Sal	46	49	49	43	49	50	45	47
34	Sal	30	30	34	36	43	37	45	37
35	Sal	38	43	48	44	43	46	45	47
38	Sal	34	37	45	42	45	37	37	39
39	Sal	39	43	43	50	50	45	45	42

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 13

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	36	32	36	33	43	34	32	35
4	Eth	37	45	43	45	42	44	34	41
5	Eth	39	42	30	33	42	50	36	51
8	Eth	39	55	32	32	33	33	30	51
9	Eth	34	30	28	25	25	26	26	28
12	Eth	48	48	34	34	37	43	45	42
13	Eth	46	42	54	41	46	43	42	43
16	Eth	40	56	36	41	41	42	46	46
17	Eth	37	45	39	36	38	39	56	41
20	Eth	42	34	32	29	32	31	32	32
21	Eth	35	32	33	32	31	31	35	35
24	Eth	46	38	34	33	36	36	33	37
25	Eth	39	41	34	32	29	31	28	33
28	Eth	38	37	30	27	30	28	30	30
29	Eth	31	51	31	29	30	33	39	38
32	Eth	35	45	36	45	40	36	37	38
33	Eth	39	43	31	31	30	33	30	35
36	Eth	29	31	30	29	29	28	34	29
37	Eth	46	38	31	31	30	39	30	34
40	Eth	36	34	30	29	31	33	30	29
2	Sal	42	48	48	46	50	51	50	47
3	Sal	52	51	49	53	54	48	55	52
6	Sal	42	44	48	50	50	40	41	44
7	Sal	43	44	43	42	43	44	44	45
10	Sal	47	52	51	46	51	52	50	49
11	Sal	57	64	57	69	62	62	57	58
14	Sal	45	49	54	45	47	50	48	50
15	Sal	39	42	42	50	48	53	52	50
18	Sal	53	49	49	52	53	48	43	55
19	Sal	50	53	57	50	53	56	57	52
22	Sal	42	48	47	46	52	52	53	50
23	Sal	49	48	47	44	60	51	49	43
26	Sal	39	41	42	40	53	42	45	54
27	Sal	34	37	39	39	35	34	39	36
30	Sal	49	52	51	50	51	44	43	53
31	Sal	43	46	43	47	39	50	46	46
34	Sal	38	42	40	37	39	38	36	38
35	Sal	40	46	46	52	47	45	49	52
38	Sal	40	40	35	39	38	35	39	36
39	Sal	30	48	46	40	42	41	45	38

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 14

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	35	31	29	26	29	29	28	27
4	Eth	39	37	32	41	30	32	28	29
5	Eth	42	56	43	53	46	46	42	45
8	Eth	30	32	37	38	49	41	41	38
9	Eth	32	30	24	26	27	28	29	26
12	Eth	43	42	34	35	29	38	38	43
13	Eth	38	41	36	35	37	35	39	40
16	Eth	40	47	52	42	43	53	55	48
17	Eth	39	41	41	36	42	39	45	38
20	Eth	42	40	33	33	31	30	35	36
21	Eth	40	40	34	36	42	39	46	39
24	Eth	45	37	32	30	31	35	35	38
25	Eth	37	34	35	38	33	32	40	34
28	Eth	31	26	31	29	35	30	29	29
29	Eth	34	34	38	42	38	37	39	41
32	Eth	39	46	42	42	39	37	42	39
33	Eth	35	29	37	30	30	33	32	33
36	Eth	28	30	31	26	27	28	29	34
37	Eth	42	52	29	28	27	27	42	34
40	Eth	42	36	37	36	40	37	38	41
2	Sal	38	47	50	50	46	51	52	50
3	Sal	46	52	47	48	51	56	45	53
6	Sal	35	48	46	43	40	39	38	46
7	Sal	37	39	42	42	38	42	43	46
10	Sal	38	43	42	47	49	44	48	48
11	Sal	44	43	48	52	58	53	61	55
14	Sal	43	43	41	50	42	52	47	46
15	Sal	42	44	41	45	47	43	43	45
18	Sal	46	48	52	48	44	44	56	52
19	Sal	51	51	53	62	52	50	54	54
22	Sal	56	50	51	57	54	53	53	55
23	Sal	44	53	50	54	47	47	50	52
26	Sal	37	45	47	46	48	44	52	48
27	Sal	38	33	37	36	35	36	34	34
30	Sal	48	53	46	50	48	46	49	47
31	Sal	42	44	45	45	43	45	46	49
34	Sal	33	36	38	38	39	41	39	45
35	Sal	35	39	41	40	39	38	44	50
38	Sal	36	42	32	34	35	35	34	40
39	Sal	29	37	35	38	41	42	45	45

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 15

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	34	31	31	29	27	29	29	30
4	Eth	36	35	43	47	33	39	37	36
5	Eth	35	35	38	31	27	31	30	33
8	Eth	37	38	29	31	31	33	33	36
9	Eth	35	30	32	29	28	32	28	27
12	Eth	45	44	34	30	35	34	35	43
13	Eth	46	47	39	39	35	37	40	41
16	Eth	35	35	31	32	37	30	37	36
17	Eth	31	50	39	37	33	37	38	48
20	Eth	41	35	33	30	37	32	34	35
21	Eth	37	36	33	36	42	38	45	39
24	Eth	35	35	29	30	28	30	41	37
25	Eth	32	39	31	24	27	27	28	30
28	Eth	33	36	30	29	29	26	27	29
29	Eth	31	30	30	34	32	35	32	37
32	Eth	33	33	34	31	33	38	35	39
33	Eth	36	39	30	30	33	30	29	38
36	Eth	27	28	30	34	34	34	33	30
37	Eth	42	32	29	27	29	26	27	30
40	Eth	34	35	30	28	30	30	31	29
2	Sal	47	43	50	43	49	50	55	51
3	Sal	38	46	42	50	57	48	46	49
6	Sal	44	43	42	43	40	38	43	43
7	Sal	38	40	39	43	39	39	43	44
10	Sal	45	50	50	45	46	45	50	50
11	Sal	43	54	54	51	51	57	55	60
14	Sal	25	24	32	36	31	39	31	35
15	Sal	29	36	34	42	43	41	41	38
18	Sal	44	51	38	40	44	45	40	43
19	Sal	51	57	49	49	52	48	52	51
22	Sal	37	48	41	44	53	50	48	41
23	Sal	31	37	42	48	44	45	46	37
26	Sal	37	46	39	37	41	42	44	50
27	Sal	31	28	30	33	32	36	32	30
30	Sal	40	48	48	50	49	50	45	49
31	Sal	39	39	43	34	42	43	41	46
34	Sal	41	40	46	40	46	44	38	43
35	Sal	37	43	40	46	44	44	36	44
38	Sal	27	42	35	33	32	31	35	40
39	Sal	33	37	39	37	43	39	40	37

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 16

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	33	26	30	27	25	28	29	28
4	Eth	34	31	31	26	28	29	30	33
5	Eth	36	35	28	28	29	31	31	36
8	Eth	35	29	26	29	27	26	32	42
9	Eth	30	28	27	27	30	31	28	29
12	Eth	46	40	35	30	34	35	35	37
13	Eth	43	45	38	37	42	37	45	37
16	Eth	39	43	44	46	45	49	45	46
17	Eth	44	45	43	47	38	54	51	39
20	Eth	47	40	35	32	34	34	37	36
21	Eth	40	38	36	33	43	46	41	41
24	Eth	41	39	31	30	34	33	34	32
25	Eth	37	41	37	38	40	40	36	40
28	Eth	39	38	32	33	30	31	32	32
29	Eth	36	29	33	29	31	32	33	36
32	Eth	37	42	33	33	36	35	34	33
33	Eth	37	41	41	36	41	40	34	34
36	Eth	30	30	34	32	34	33	33	35
37	Eth	46	37	31	27	31	30	49	36
40	Eth	36	30	31	28	26	29	28	31
2	Sal	42	46	48	45	49	44	47	44
3	Sal	56	49	53	50	54	56	51	46
6	Sal	42	41	38	44	39	43	34	36
7	Sal	34	40	46	42	41	43	42	46
10	Sal	39	43	43	41	46	48	50	47
11	Sal	53	47	50	49	56	52	53	50
14	Sal	32	45	37	40	36	35	42	48
15	Sal	33	47	43	43	38	48	47	43
18	Sal	43	42	40	51	46	47	41	40
19	Sal	44	45	47	55	49	46	53	46
22	Sal	38	42	49	48	51	49	44	49
23	Sal	40	48	44	44	47	41	46	43
26	Sal	44	56	43	49	43	47	43	50
27	Sal	28	26	29	34	32	40	38	32
30	Sal	42	49	49	51	44	41	50	43
31	Sal	36	42	39	40	46	51	45	46
34	Sal	30	30	36	36	36	38	32	32
35	Sal	39	41	40	38	46	39	40	43
38	Sal	30	35	30	36	37	44	41	39
39	Sal	40	44	40	35	40	40	44	41

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 17

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	37	37	29	27	32	30	35	29
4	Eth	44	38	36	35	32	35	36	46
5	Eth	46	43	35	39	33	37	36	34
8	Eth	33	36	30	31	29	33	38	35
9	Eth	37	33	32	32	35	30	32	32
12	Eth	35	44	31	33	32	32	42	38
13	Eth	43	43	36	40	36	40	43	38
16	Eth	36	38	47	53	38	39	45	40
17	Eth	46	48	50	49	47	49	48	47
20	Eth	44	42	35	34	36	39	34	41
21	Eth	42	46	36	39	41	40	41	42
24	Eth	43	41	33	37	35	39	41	38
25	Eth	39	37	42	37	36	37	37	38
28	Eth	44	40	34	36	35	33	37	34
29	Eth	31	35	30	35	32	36	39	36
32	Eth	48	40	46	48	39	43	41	41
33	Eth	34	38	37	31	31	30	33	35
36	Eth	31	32	29	30	29	33	32	33
37	Eth	45	39	36	38	34	35	33	36
40	Eth	38	31	29	29	28	40	34	36
2	Sal	49	43	46	48	47	47	43	48
3	Sal	36	42	46	51	43	53	51	54
6	Sal	43	46	43	41	43	42	42	43
7	Sal	36	40	43	50	45	47	42	44
10	Sal	43	51	51	46	45	46	45	43
11	Sal	46	47	53	61	46	49	57	53
14	Sal	33	39	36	31	49	39	41	45
15	Sal	36	40	42	43	40	45	37	42
18	Sal	47	46	47	43	52	46	45	48
19	Sal	41	50	46	49	50	50	50	52
22	Sal	49	48	57	53	46	54	55	50
23	Sal	46	48	47	45	46	46	47	46
26	Sal	48	55	46	53	47	51	53	51
27	Sal	32	35	37	36	33	33	34	36
30	Sal	48	50	49	46	53	44	50	50
31	Sal	42	49	52	49	47	50	47	45
34	Sal	36	38	36	48	40	40	37	39
35	Sal	47	46	54	47	47	48	49	49
38	Sal	34	41	42	41	46	43	43	48
39	Sal	50	44	52	43	42	46	51	45

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 18

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	35	35	29	29	27	29	40	32
4	Eth	40	44	41	35	34	33	36	41
5	Eth	33	33	34	29	28	35	32	31
8	Eth	35	43	35	51	39	51	52	53
9	Eth	28	34	27	28	26	31	28	28
12	Eth	33	34	28	27	27	27	33	38
13	Eth	48	47	38	35	41	37	36	45
16	Eth	45	49	53	44	47	56	54	49
17	Eth	45	52	47	42	38	43	45	43
20	Eth	39	38	41	39	46	35	34	37
21	Eth	38	36	34	38	41	37	42	36
24	Eth	40	43	39	34	37	39	36	37
25	Eth	35	39	30	31	29	34	34	35
28	Eth	33	32	33	28	28	29	33	34
29	Eth	39	34	32	33	36	33	31	38
32	Eth	37	39	35	36	35	36	33	37
33	Eth	42	35	31	29	30	35	34	29
36	Eth	35	34	31	29	31	33	32	35
37	Eth	39	34	27	30	29	29	32	33
40	Eth	38	36	30	28	29	34	34	33
2	Sal	34	48	43	43	50	51	45	46
3	Sal	40	50	48	52	61	58	50	51
6	Sal	39	40	40	40	38	39	40	35
7	Sal	38	36	37	37	43	41	38	35
10	Sal	40	43	38	43	43	42	43	45
11	Sal	48	50	48	60	53	51	44	51
14	Sal	38	43	41	46	48	40	47	44
15	Sal	50	50	50	46	49	47	48	45
18	Sal	56	48	51	51	50	48	54	51
19	Sal	48	57	50	50	55	54	54	51
22	Sal	51	54	56	51	53	50	57	54
23	Sal	41	46	47	45	46	47	49	49
26	Sal	50	48	47	51	51	51	49	47
27	Sal	35	38	31	34	32	34	34	35
30	Sal	49	49	45	48	44	43	50	48
31	Sal	41	48	47	45	53	45	50	53
34	Sal	38	39	35	39	42	38	36	31
35	Sal	34	37	41	46	46	49	50	46
38	Sal	41	42	41	40	42	42	42	42
39	Sal	43	42	42	40	44	44	44	45

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 19

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	34	37	36	42	46	38	33	39
4	Eth	37	37	31	33	30	29	31	38
5	Eth	39	35	33	32	31	34	34	33
8	Eth	42	46	30	30	29	28	30	32
9	Eth	34	37	39	32	32	35	33	32
12	Eth	31	30	35	34	28	35	31	37
13	Eth	34	38	36	43	40	41	41	42
16	Eth	37	40	31	26	30	27	25	40
17	Eth	40	44	37	38	35	37	40	44
20	Eth	43	43	38	36	39	37	39	39
21	Eth	41	46	39	38	44	41	41	38
24	Eth	39	46	49	42	38	49	37	42
25	Eth	39	40	37	37	35	34	41	37
28	Eth	46	42	38	37	37	39	37	37
29	Eth	41	37	37	36	39	37	39	38
32	Eth	46	49	39	45	44	46	51	40
33	Eth	41	52	38	34	42	49	43	43
36	Eth	34	32	32	32	31	35	36	37
37	Eth	49	56	46	42	43	42	40	42
40	Eth	42	34	32	31	32	33	33	39
2	Sal	47	48	47	44	51	49	45	45
3	Sal	39	51	52	46	50	45	50	53
6	Sal	32	33	34	35	38	40	34	40
7	Sal	34	36	38	37	40	39	43	38
10	Sal	37	39	40	42	48	46	44	42
11	Sal	37	49	40	47	56	51	44	51
14	Sal	28	31	34	42	35	33	48	40
15	Sal	40	48	45	51	48	51	50	50
18	Sal	50	44	41	48	38	42	40	44
19	Sal	52	50	45	48	57	52	48	53
22	Sal	45	49	55	48	46	55	53	49
23	Sal	43	49	51	47	51	52	48	53
26	Sal	46	39	50	55	46	48	51	46
27	Sal	34	39	37	37	41	38	37	43
30	Sal	45	52	47	54	49	43	49	47
31	Sal	45	49	46	46	50	46	52	50
34	Sal	36	37	39	39	48	47	48	42
35	Sal	40	46	46	42	46	45	42	48
38	Sal	44	40	43	42	40	41	41	43
39	Sal	38	45	41	49	42	40	49	46

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 20

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	42	35	32	28	30	33	30	32
4	Eth	36	41	31	32	33	32	35	33
5	Eth	36	35	37	33	35	32	40	34
8	Eth	34	34	30	30	31	29	30	30
9	Eth	31	33	29	30	29	30	26	31
12	Eth	37	38	29	27	28	30	31	36
13	Eth	38	44	46	47	40	46	47	46
16	Eth	36	46	32	31	27	30	29	30
17	Eth	45	43	46	42	44	50	40	43
20	Eth	42	40	36	35	35	34	33	37
21	Eth	43	51	38	41	44	44	40	47
24	Eth	41	38	33	35	33	36	35	36
25	Eth	36	44	38	32	34	31	33	34
28	Eth	35	35	34	32	34	31	35	35
29	Eth	37	36	35	34	35	39	35	44
32	Eth	34	37	39	34	41	37	34	41
33	Eth	39	45	41	38	36	33	39	33
36	Eth	30	30	28	29	28	30	31	34
37	Eth	41	47	31	38	37	32	33	37
40	Eth	38	37	30	28	29	33	28	33
2	Sal	40	42	50	50	52	54	44	50
3	Sal	38	41	46	45	43	42	44	46
6	Sal	36	46	50	46	46	40	46	38
7	Sal	38	43	42	40	42	38	37	41
10	Sal	37	44	40	39	43	40	43	39
11	Sal	47	43	43	52	54	52	50	50
14	Sal	26	34	38	35	37	42	37	37
15	Sal	30	34	40	42	49	48	43	40
18	Sal	30	47	40	37	42	37	45	36
19	Sal	37	40	45	45	46	51	52	48
22	Sal	48	52	56	52	50	56	55	50
23	Sal	49	46	47	49	50	48	48	48
26	Sal	46	50	49	44	50	42	49	46
27	Sal	30	32	35	33	36	31	34	37
30	Sal	42	45	50	49	42	45	47	44
31	Sal	44	54	47	46	46	52	49	49
34	Sal	39	40	38	42	44	41	39	39
35	Sal	37	41	41	48	46	42	45	47
38	Sal	45	42	47	46	44	44	45	46
39	Sal	46	48	45	43	44	48	44	44

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Development, Day 21

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	40	37	30	28	27	27	28	29
4	Eth	33	42	29	28	29	28	30	36
5	Eth	36	36	37	36	30	34	31	35
8	Eth	37	42	33	30	33	31	30	33
9	Eth	24	33	28	27	28	28	33	28
12	Eth	33	38	30	29	28	27	29	35
13	Eth	37	38	37	43	42	45	47	47
16	Eth	39	47	35	29	30	29	35	30
17	Eth	42	51	40	40	42	43	46	43
20	Eth	46	42	47	41	39	39	41	44
21	Eth	49	50	43	45	44	43	48	45
24	Eth	37	42	36	39	38	38	41	37
25	Eth	42	42	37	36	34	34	37	37
28	Eth	39	38	36	42	35	36	34	37
29	Eth	37	34	37	33	32	35	40	43
32	Eth	45	44	41	44	45	51	44	41
33	Eth	42	56	42	41	37	40	40	41
36	Eth	33	39	29	28	28	30	30	32
37	Eth	45	49	40	35	37	34	36	44
40	Eth	34	28	31	27	27	28	33	29
2	Sal	35	40	41	47	48	46	51	47
3	Sal	34	40	40	47	50	44	39	39
6	Sal	32	33	40	32	30	34	34	35
7	Sal	37	35	37	35	32	42	38	37
10	Sal	32	39	34	32	46	33	36	33
11	Sal	48	45	47	47	46	42	40	46
14	Sal	32	34	34	35	49	37	33	38
15	Sal	39	43	40	40	41	45	46	48
18	Sal	43	38	45	45	39	43	40	42
19	Sal	45	52	51	42	48	40	46	48
22	Sal	43	58	47	56	46	51	52	49
23	Sal	48	52	56	49	54	49	52	51
26	Sal	46	55	49	48	52	48	50	54
27	Sal	31	30	32	32	36	36	34	33
30	Sal	51	48	51	49	49	50	52	49
31	Sal	46	41	49	47	47	48	52	52
34	Sal	40	39	44	41	41	40	38	44
35	Sal	41	55	43	41	41	47	44	44
38	Sal	45	44	46	44	39	47	41	43
39	Sal	43	48	47	49	48	47	48	46

Chapter 4, Experiment 1 -- Test for Conditional Response
 Tolerance Development, Day 22
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	34	34	39	42	33	42	33	36
4	Eth	37	34	30	28	28	30	36	33
5	Eth	39	37	36	34	35	34	35	34
8	Eth	32	46	30	50	37	54	50	55
9	Eth	30	30	32	32	26	29	32	28
12	Eth	37	37	28	29	27	28	31	30
13	Eth	31	31	29	27	32	30	26	37
16	Eth	38	44	46	41	48	51	46	48
17	Eth	44	55	40	38	42	42	41	46
20	Eth	43	43	37	36	39	40	36	40
21	Eth	43	44	46	42	46	41	45	43
24	Eth	39	37	33	35	37	37	35	43
25	Eth	39	37	36	35	42	38	36	40
28	Eth	42	38	37	36	35	36	35	36
29	Eth	34	39	33	32	33	35	37	36
32	Eth	43	43	40	41	39	39	41	41
33	Eth	43	41	36	43	37	35	36	38
36	Eth	30	37	30	29	26	39	33	35
37	Eth	41	46	36	34	35	42	39	46
40	Eth	34	29	27	28	26	29	28	34
2	Sal	44	48	43	41	47	47	45	40
3	Sal	36	44	39	39	53	40	48	42
6	Sal	36	40	38	47	39	39	42	42
7	Sal	38	34	41	42	40	39	38	37
10	Sal	39	42	37	38	45	40	44	42
11	Sal	44	49	47	54	48	46	44	46
14	Sal	32	44	50	36	38	37	41	36
15	Sal	37	43	43	42	38	41	43	40
18	Sal	27	31	32	30	30	28	31	34
19	Sal	35	46	38	46	51	42	46	46
22	Sal	50	54	52	54	54	51	50	54
23	Sal	48	49	49	51	49	52	47	51
26	Sal	46	47	54	51	54	47	46	48
27	Sal	34	35	39	34	33	33	38	37
30	Sal	44	47	44	46	44	47	45	50
31	Sal	41	47	44	43	47	44	50	51
34	Sal	38	39	35	38	40	42	44	40
35	Sal	40	45	42	42	46	41	45	43
38	Sal	40	42	43	39	39	42	43	42
39	Sal	43	43	45	48	50	49	45	47

Chapter 4. Experiment 1 -- Test for Conditional Response
 Conditional Response Test, all rats get saline

Slip Angles, Absolute Values

Subj #	Group	Test								
		Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	off	38	38	40	43	40	48	46	42
9	Eth	off	32	35	34	34	33	33	34	35
24	Eth	off	42	46	47	47	46	46	49	49
25	Eth	off	39	44	43	43	45	46	45	46
29	Eth	off	37	42	41	45	47	47	43	43
8	Eth	off	35	47	41	51	43	53	54	56
33	Eth	off	41	46	44	48	48	47	45	49
5	Eth	off	33	46	45	48	46	42	45	45
4	Eth	off	34	47	41	43	43	44	44	46
37	Eth	off	48	51	51	53	54	53	58	52
17	Eth	on	33	41	36	38	39	42	42	46
36	Eth	on	31	29	37	30	30	31	36	32
32	Eth	on	43	50	46	47	45	49	45	49
28	Eth	on	43	45	46	48	50	46	49	45
21	Eth	on	42	44	42	43	46	41	44	46
20	Eth	on	47	51	47	48	50	52	51	49
16	Eth	on	33	38	36	58	48	56	46	57
13	Eth	on	38	38	45	41	40	49	43	48
12	Eth	on	42	41	45	43	47	49	48	42
40	Eth	on	32	35	31	36	36	34	33	38
18	Sal	off	37	45	40	36	35	39	38	48
39	Sal	off	44	44	46	49	46	51	44	52
38	Sal	off	40	42	42	43	44	45	42	45
6	Sal	off	40	40	45	47	38	43	42	37
7	Sal	off	37	39	39	40	40	43	40	39
10	Sal	off	36	40	35	39	37	43	40	37
30	Sal	off	46	47	44	45	50	47	44	52
27	Sal	off	34	37	36	34	38	34	38	39
26	Sal	off	43	44	47	44	42	47	46	44
19	Sal	off	46	46	47	46	51	49	51	45
14	Sal	on	29	32	32	39	36	32	35	36
22	Sal	on	47	49	51	48	50	52	52	50
23	Sal	on	45	48	50	48	46	49	55	49
3	Sal	on	36	41	40	43	38	40	36	43
34	Sal	on	40	44	42	50	47	43	43	42
35	Sal	on	45	49	48	44	49	47	55	46
11	Sal	on	47	45	56	49	60	48	58	50
31	Sal	on	47	45	51	47	50	52	47	50
15	Sal	on	36	37	36	40	41	39	43	46
2	Sal	on	42	46	36	43	53	49	57	57

Chapter 4, Experiment 1 -- Test for Conditional Response
 Tolerance Reacquisition, Day 1
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	32	31	32	26	29	26	28	29
4	Eth	37	32	30	33	32	42	38	33
5	Eth	35	42	32	30	30	32	31	32
8	Eth	36	53	43	31	30	31	40	46
9	Eth	33	32	40	28	29	30	28	26
12	Eth	42	45	42	39	39	36	40	38
13	Eth	36	43	42	41	37	39	38	37
16	Eth	45	48	41	38	38	45	38	39
17	Eth	44	46	45	47	41	45	43	46
20	Eth	46	38	35	37	35	34	36	35
21	Eth	37	41	40	39	34	38	39	41
24	Eth	41	39	35	34	38	37	36	39
25	Eth	37	37	34	33	36	34	35	38
28	Eth	39	37	35	33	34	33	35	37
29	Eth	36	35	37	36	34	35	36	34
32	Eth	41	43	44	38	48	44	40	44
33	Eth	39	43	34	32	36	34	37	33
36	Eth	29	31	30	28	33	34	32	37
37	Eth	49	56	45	48	45	49	44	55
40	Eth	45	38	34	33	32	32	35	37
2	Sal	40	47	45	46	50	46	50	46
3	Sal	37	40	46	37	49	42	41	42
6	Sal	37	40	37	37	34	43	36	37
7	Sal	35	34	35	38	37	36	43	35
10	Sal	34	38	36	46	35	36	36	33
11	Sal	38	43	43	44	46	48	42	40
14	Sal	29	30	41	37	45	39	38	36
15	Sal	44	43	40	50	47	45	50	48
18	Sal	32	29	28	31	29	33	34	36
19	Sal	35	36	46	45	48	44	39	45
22	Sal	41	49	50	51	48	46	52	47
23	Sal	49	50	48	48	48	51	46	46
26	Sal	44	49	45	53	50	44	46	45
27	Sal	35	41	40	34	37	33	34	34
30	Sal	46	51	46	50	46	54	51	47
31	Sal	40	41	44	42	45	49	42	45
34	Sal	37	41	39	42	43	43	42	39
35	Sal	46	46	49	49	55	51	50	49
38	Sal	40	39	38	37	39	36	36	40
39	Sal	43	44	46	48	55	50	51	51

Chapter 4, Experiment 1 -- Test for Conditional Response
 Tolerance Reacquisition, Day 2
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	29	31	28	29	26	26	27	29
4	Eth	34	32	45	34	31	35	30	33
5	Eth	30	27	27	23	25	24	25	29
8	Eth	45	49	35	31	33	30	38	39
9	Eth	30	32	31	36	27	32	29	33
12	Eth	43	40	30	29	30	34	33	41
13	Eth	38	37	35	35	34	34	36	38
16	Eth	36	45	34	32	29	31	33	37
17	Eth	39	55	50	50	42	54	40	50
20	Eth	49	45	39	39	38	38	43	40
21	Eth	41	47	42	42	45	41	43	41
24	Eth	43	44	35	39	37	37	40	41
25	Eth	39	36	38	35	36	35	34	36
28	Eth	40	48	34	36	37	36	34	35
29	Eth	39	40	36	41	34	33	37	34
32	Eth	42	46	43	37	46	39	36	41
33	Eth	33	34	36	38	35	51	31	31
36	Eth	31	36	29	38	28	31	39	34
37	Eth	45	46	42	45	50	43	46	46
40	Eth	41	34	31	30	31	33	36	35
2	Sal	45	44	45	48	50	50	50	51
3	Sal	43	51	46	42	41	46	40	41
6	Sal	35	33	36	37	33	35	33	40
7	Sal	32	35	30	38	38	36	42	34
10	Sal	40	38	38	39	38	40	38	36
11	Sal	43	40	46	43	50	42	51	43
14	Sal	28	34	36	38	42	40	37	39
15	Sal	40	43	43	50	46	47	43	47
18	Sal	44	46	38	39	37	37	35	40
19	Sal	45	53	50	49	54	53	47	50
22	Sal	47	50	52	54	49	52	53	51
23	Sal	48	48	52	49	53	51	49	48
26	Sal	45	48	44	46	47	51	52	49
27	Sal	32	33	35	37	35	34	35	34
30	Sal	45	43	47	44	43	42	45	47
31	Sal	45	42	47	47	45	45	44	45
34	Sal	40	43	44	42	53	44	42	50
35	Sal	47	52	53	48	51	54	51	48
38	Sal	41	42	36	38	37	46	45	46
39	Sal	44	46	46	48	49	49	46	52

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Reacquisition, Day 3

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	37	39	37	34	36	31	33	36
4	Eth	38	43	46	41	44	42	40	42
5	Eth	36	48	32	35	33	30	33	34
8	Eth	30	40	28	26	24	39	30	37
9	Eth	30	34	35	27	26	30	28	29
12	Eth	40	43	37	34	31	32	38	33
13	Eth	38	44	41	43	46	46	40	50
16	Eth	45	47	48	46	39	41	43	45
17	Eth	40	40	34	34	36	39	37	37
20	Eth	45	46	46	42	38	39	38	45
21	Eth	42	48	43	44	40	41	42	47
24	Eth	41	40	38	38	45	38	43	43
25	Eth	39	40	37	33	37	36	39	37
28	Eth	48	40	39	39	44	41	42	40
29	Eth	36	40	40	36	34	40	43	39
32	Eth	43	42	51	40	40	48	42	43
33	Eth	45	40	39	38	40	43	40	40
36	Eth	35	39	33	32	40	31	34	37
37	Eth	44	45	38	43	36	52	43	45
40	Eth	38	35	34	33	33	34	34	37
2	Sal	42	50	53	51	47	49	46	49
3	Sal	45	41	48	40	43	46	45	46
6	Sal	46	40	49	42	41	43	44	40
7	Sal	45	45	43	45	42	43	42	42
10	Sal	34	37	36	37	35	36	35	36
11	Sal	43	46	48	46	50	49	52	47
14	Sal	32	38	43	48	44	42	46	48
15	Sal	46	41	42	46	46	43	44	45
18	Sal	39	40	39	37	40	42	40	38
19	Sal	38	46	48	50	51	44	49	54
22	Sal	42	51	42	53	48	47	56	52
23	Sal	48	46	54	52	55	56	47	51
26	Sal	47	58	50	46	58	52	54	55
27	Sal	35	37	37	36	42	36	38	37
30	Sal	51	52	54	54	47	48	49	46
31	Sal	50	50	51	56	55	50	50	51
34	Sal	42	40	46	54	44	51	49	52
35	Sal	48	51	53	52	56	52	53	52
38	Sal	44	45	45	44	44	48	44	43
39	Sal	48	49	53	47	52	52	54	51

Chapter 4, Experiment 1 -- Test for Conditional Response
Tolerance Reacquisition, Day 4
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	31	36	26	28	25	26	30	28
4	Eth	36	38	37	32	36	36	35	43
5	Eth	38	36	34	35	33	33	32	35
8	Eth	36	43	32	32	31	32	34	33
9	Eth	27	27	32	26	25	25	28	30
12	Eth	34	35	30	28	28	28	39	32
13	Eth	39	43	42	37	45	45	48	45
16	Eth	40	47	38	35	37	37	39	37
17	Eth	39	41	39	37	38	38	39	43
20	Eth	46	46	44	39	43	39	41	42
21	Eth	44	46	49	44	45	40	43	45
24	Eth	41	40	38	38	37	44	40	50
25	Eth	42	45	37	36	38	40	40	40
28	Eth	47	48	45	41	41	44	42	44
29	Eth	40	42	37	35	43	40	38	36
32	Eth	43	44	42	39	43	47	38	39
33	Eth	39	45	38	54	43	46	38	37
36	Eth	32	33	30	32	28	34	35	30
37	Eth	45	47	34	35	35	47	42	40
40	Eth	42	44	42	41	40	42	38	40
2	Sal	38	46	43	45	46	46	47	48
3	Sal	35	43	47	42	44	44	42	44
6	Sal	36	39	36	34	37	37	37	35
7	Sal	33	37	36	32	40	40	36	37
10	Sal	37	37	36	35	33	33	33	36
11	Sal	41	44	45	46	45	45	52	50
14	Sal	29	31	33	35	38	38	33	36
15	Sal	36	37	38	40	40	40	39	43
18	Sal	30	29	32	33	30	30	30	33
19	Sal	34	35	32	38	46	46	37	45
22	Sal	48	55	49	51	49	53	54	52
23	Sal	46	50	52	51	51	48	54	51
26	Sal	49	51	51	50	58	52	50	57
27	Sal	34	37	34	36	40	34	36	37
30	Sal	52	51	52	52	55	49	51	59
31	Sal	49	54	56	52	54	54	58	54
34	Sal	45	51	55	49	54	53	50	50
35	Sal	50	51	50	48	50	53	48	54
38	Sal	43	46	42	40	40	44	44	47
39	Sal	49	52	51	49	47	54	51	54

Chapter 4. Experiment 1 -- Test for Conditional Response
Tolerance Test, all rats get ethanol

Slip Angles, Absolute Values

Subj #	Group	Test								
		Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
20	Eth	off	46	48	41	39	41	38	39	43
12	Eth	off	38	40	34	33	32	32	31	33
36	Eth	off	34	36	41	36	32	35	36	37
32	Eth	off	43	48	45	45	38	43	39	48
28	Eth	off	43	43	47	39	40	38	44	38
21	Eth	off	46	45	46	48	44	44	43	44
17	Eth	off	40	37	39	36	38	42	38	43
16	Eth	off	35	37	32	30	30	33	36	35
13	Eth	off	40	43	46	35	37	36	39	36
40	Eth	off	42	42	39	36	35	37	34	35
25	Eth	on	47	44	35	34	31	34	32	36
24	Eth	on	42	37	32	33	34	33	34	36
37	Eth	on	45	47	34	35	37	41	37	36
33	Eth	on	46	46	44	36	32	36	32	36
4	Eth	on	37	29	23	23	24	23	22	23
29	Eth	on	39	34	30	33	28	29	30	29
5	Eth	on	34	31	26	24	29	24	26	30
1	Eth	on	36	34	25	22	21	22	23	22
8	Eth	on	33	35	23	23	31	22	24	32
9	Eth	on	32	34	25	24	24	24	23	24
2	Sal	off	39	40	24	21	22	24	23	22
3	Sal	off	35	34	32	29	29	36	30	35
35	Sal	off	49	44	38	37	39	33	39	35
34	Sal	off	41	35	31	30	29	32	29	28
14	Sal	off	32	29	24	25	23	24	26	23
15	Sal	off	46	43	41	43	39	39	42	38
31	Sal	off	42	38	31	32	33	32	31	34
11	Sal	off	41	35	36	31	31	29	30	29
23	Sal	off	49	36	34	32	34	35	33	37
22	Sal	off	47	38	37	35	34	32	37	40
7	Sal	on	35	29	26	24	25	23	24	25
39	Sal	on	44	38	32	29	32	44	34	33
38	Sal	on	44	37	36	34	33	31	33	36
6	Sal	on	34	26	26	25	26	25	24	26
18	Sal	on	39	28	40	34	37	33	31	35
30	Sal	on	46	45	32	36	32	34	31	33
10	Sal	on	28	34	21	26	27	21	22	21
26	Sal	on	51	38	34	33	34	35	33	33
27	Sal	on	34	27	27	26	26	27	29	28
19	Sal	on	29	27	19	23	21	20	21	23

APPENDIX D

Raw data collected for Experiment 2, Chapter 4

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Pre Tolerance Test Day

Slip Angles, Absolute Values

Subj #	Group	Test		Slip Angles, Absolute Values						
		Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
16	Eth	off	43	34	35	33	35	34	36	42
10	Eth	off	38	39	37	32	31	32	34	33
38	Eth	off	42	43	40	34	38	37	35	36
18	Eth	off	43	33	34	28	28	27	30	28
36	Eth	off	49	46	34	35	38	37	36	36
30	Eth	off	48	44	39	38	36	39	45	39
29	Eth	off	48	43	40	39	39	38	42	40
9	Eth	off	46	36	35	35	34	32	33	40
35	Eth	off	50	49	48	47	43	60	44	52
15	Eth	off	40	30	30	32	33	30	31	37
2	Eth	on	48	33	31	36	34	34	31	34
22	Eth	on	45	42	41	36	35	37	34	37
21	Eth	on	45	45	38	42	38	36	41	39
17	Eth	on	41	36	36	30	32	36	30	36
37	Eth	on	43	44	45	43	39	41	38	37
1	Eth	on	43	37	34	37	37	32	39	33
28	Eth	on	49	43	40	39	42	38	38	42
27	Eth	on	46	42	38	39	40	36	38	39
8	Eth	on	40	31	33	30	38	35	31	34
7	Eth	on	45	37	44	38	46	38	37	43
31	Sal	off	50	48	49	47	46	48	47	46
32	Sal	off	43	47	44	45	45	50	50	47
34	Sal	off	47	53	50	49	46	49	49	52
33	Sal	off	45	52	47	48	48	44	49	52
20	Sal	off	43	39	50	45	40	45	46	41
12	Sal	off	40	57	42	42	45	45	52	46
14	Sal	off	42	40	37	43	42	46	42	39
11	Sal	off	36	45	41	38	43	36	40	40
13	Sal	off	41	41	40	41	44	43	47	43
40	Sal	off	43	45	45	43	45	41	42	45
19	Sal	on	47	46	44	44	45	50	50	48
4	Sal	on	42	40	41	39	39	38	42	40
39	Sal	on	52	52	60	50	48	49	52	54
3	Sal	on	46	50	42	46	43	42	47	42
6	Sal	on	41	41	38	44	41	46	45	42
5	Sal	on	41	41	41	39	40	48	40	43
23	Sal	on	46	44	50	42	45	47	45	44
24	Sal	on	42	44	47	45	45	45	44	49
25	Sal	on	48	52	47	49	49	48	52	53
26	Sal	on	43	52	40	41	44	40	41	45

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON

Tolerance Development, Day 1

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	42	36	36	38	32	32	37	40
2	Eth	50	37	35	36	34	38	33	42
9	Eth	40	41	36	34	37	48	35	45
10	Eth	46	35	33	35	33	35	33	41
16	Eth	50	34	34	35	35	31	35	34
17	Eth	40	34	34	36	37	35	35	31
18	Eth	43	38	38	28	39	43	33	41
21	Eth	47	46	42	39	38	38	38	42
22	Eth	45	47	41	35	38	39	39	41
29	Eth	42	42	35	36	40	49	37	38
30	Eth	49	48	39	38	38	48	39	38
36	Eth	43	55	49	49	43	39	40	39
37	Eth	46	47	40	38	38	39	42	40
38	Eth	47	41	42	42	39	37	38	40
7	Eth	44	48	38	40	42	40	51	36
8	Eth	42	31	35	32	35	32	35	36
15	Eth	42	30	30	30	30	32	30	35
27	Eth	45	37	34	36	35	34	33	33
28	Eth	45	40	50	34	37	40	41	38
35	Eth	51	49	36	45	39	40	41	42
3	Sal	42	42	43	44	44	44	45	48
4	Sal	41	41	39	40	42	40	38	42
5	Sal	43	42	48	54	44	50	50	53
6	Sal	49	48	46	45	46	50	54	52
11	Sal	41	39	39	42	50	50	46	43
12	Sal	42	41	41	44	48	48	53	46
13	Sal	42	46	46	54	40	54	48	50
14	Sal	45	48	48	45	41	48	45	44
19	Sal	47	46	47	43	49	50	43	50
20	Sal	41	43	43	43	44	48	50	43
23	Sal	46	45	47	50	49	49	48	50
24	Sal	45	47	47	49	45	46	45	49
25	Sal	49	46	52	45	48	50	50	50
26	Sal	41	40	41	44	46	47	46	50
31	Sal	45	43	45	42	50	46	47	49
32	Sal	50	48	48	47	50	50	48	49
33	Sal	48	48	50	52	49	50	52	55
34	Sal	45	49	53	47	49	48	48	49
39	Sal	45	48	48	51	50	49	52	45
40	Sal	44	42	43	43	43	42	43	50

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Development, Day 2
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	46	35	35	38	40	40	37
2	Eth	42	40	35	40	37	25	38	40
9	Eth	50	57	43	42	36	36	37	44
10	Eth	38	48	39	41	29	33	37	37
16	Eth	38	35	38	36	32	39	37	37
17	Eth	44	35	35	37	40	42	43	47
18	Eth	40	38	30	32	34	31	36	42
21	Eth	48	54	48	40	38	38	38	42
22	Eth	45	40	38	40	41	41	38	39
29	Eth	43	41	34	34	33	33	37	37
30	Eth	45	41	39	38	36	36	35	38
36	Eth	46	41	40	34	36	39	39	39
37	Eth	46	42	35	39	37	39	38	39
38	Eth	41	41	35	30	37	36	37	38
7	Eth	53	40	34	35	39	38	37	42
8	Eth	40	37	39	40	38	40	47	42
15	Eth	44	46	43	43	38	34	35	37
27	Eth	40	38	33	34	32	32	33	34
28	Eth	48	45	35	34	37	37	42	41
35	Eth	51	45	40	41	39	43	45	50
3	Sal	45	43	48	45	48	50	46	46
4	Sal	43	44	46	44	49	48	43	45
5	Sal	51	50	60	51	56	50	57	49
6	Sal	45	53	51	49	52	52	57	58
11	Sal	45	45	48	45	56	50	50	44
12	Sal	50	58	49	54	60	53	51	57
13	Sal	45	52	53	48	46	52	51	50
14	Sal	43	43	46	50	43	45	46	47
19	Sal	50	48	50	50	50	50	48	47
20	Sal	43	48	45	44	42	50	46	42
23	Sal	46	47	48	48	49	49	49	53
24	Sal	47	45	47	46	50	50	50	45
25	Sal	48	56	46	51	49	49	52	45
26	Sal	44	50	47	47	49	49	52	51
31	Sal	46	48	52	52	46	46	46	48
32	Sal	48	51	46	51	50	47	52	48
33	Sal	47	48	45	51	52	49	49	49
34	Sal	41	41	45	41	44	44	55	47
39	Sal	46	46	51	49	56	56	60	57
40	Sal	43	40	41	47	45	44	44	45

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 3

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	50	47	43	46	47	41	43
2	Eth	43	43	37	39	40	45	40	34
9	Eth	44	40	40	35	40	33	43	40
10	Eth	45	43	46	46	42	39	38	50
16	Eth	43	43	43	43	38	35	37	38
17	Eth	46	34	39	39	36	38	38	37
18	Eth	46	39	35	35	36	39	42	42
21	Eth	42	39	39	45	42	36	39	40
22	Eth	50	44	43	40	37	41	48	38
29	Eth	46	42	39	42	42	42	44	42
30	Eth	52	45	42	39	42	48	50	45
36	Eth	45	39	34	37	39	38	39	39
37	Eth	45	42	39	35	39	39	35	38
38	Eth	40	44	37	39	38	46	38	35
7	Eth	47	50	44	35	35	39	42	42
8	Eth	42	39	42	43	40	37	40	37
15	Eth	42	40	35	35	42	38	41	39
27	Eth	46	39	37	37	39	39	39	36
28	Eth	48	42	34	38	40	42	41	39
35	Eth	50	49	46	42	46	46	42	42
3	Sal	43	47	47	45	49	58	54	49
4	Sal	45	44	46	43	48	45	45	51
5	Sal	46	47	49	58	47	50	48	53
6	Sal	48	53	43	43	53	47	45	47
11	Sal	44	50	53	53	48	49	50	50
12	Sal	48	57	49	49	52	55	55	56
13	Sal	46	50	45	45	44	50	49	49
14	Sal	47	45	42	42	46	46	56	51
19	Sal	54	51	48	47	52	52	45	48
20	Sal	44	44	46	46	47	50	46	49
23	Sal	47	43	49	44	54	46	49	50
24	Sal	46	51	53	49	50	49	50	49
25	Sal	49	52	52	50	50	49	49	50
26	Sal	46	49	47	49	55	47	44	48
31	Sal	46	46	46	45	46	45	45	50
32	Sal	49	53	49	54	51	55	52	49
33	Sal	45	49	52	50	46	45	51	51
34	Sal	44	49	46	47	46	48	52	46
39	Sal	50	49	53	56	56	52	52	50
40	Sal	45	46	45	46	50	43	44	52

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 4

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	40	42	38	45	40	43	43
2	Sal	40	37	39	33	33	42	36	32
9	Eth	43	48	37	36	39	39	42	38
10	Sal	45	42	39	35	40	43	43	43
16	Eth	42	44	38	33	41	37	37	39
17	Eth	41	45	38	41	49	40	41	47
18	Sal	46	44	29	29	35	39	46	45
21	Eth	45	42	35	38	38	36	34	37
22	Sal	48	46	44	35	38	40	39	36
29	Eth	45	43	42	50	39	38	38	38
30	Sal	45	46	39	39	40	52	40	38
36	Eth	49	41	35	37	36	34	37	39
37	Eth	45	45	42	35	35	35	35	36
38	Sal	41	46	39	42	41	41	39	40
7	Eth	51	42	40	37	45	42	41	41
8	Eth	50	43	43	35	39	41	39	38
15	Eth	50	39	43	37	36	40	42	40
27	Eth	45	52	39	37	36	36	37	38
28	Eth	51	49	42	49	43	41	42	43
35	Eth	49	47	45	49	48	54	53	52
3	Sal	43	49	46	46	51	47	54	50
4	Sal	43	43	45	44	43	45	55	45
5	Sal	44	49	46	50	45	50	49	48
6	Eth	43	49	49	50	48	53	53	54
11	Sal	48	52	45	47	49	49	45	48
12	Sal	50	54	54	46	52	50	50	49
13	Sal	45	55	46	50	48	49	60	51
14	Eth	45	53	42	47	42	49	50	50
19	Sal	44	44	42	46	44	42	48	47
20	Sal	45	44	46	49	43	49	46	43
23	Sal	48	50	55	52	52	51	49	49
24	Sal	48	49	48	49	49	49	49	51
25	Sal	50	50	54	51	50	50	60	55
26	Eth	52	48	48	45	46	46	49	48
31	Sal	45	48	49	50	52	49	47	48
32	Sal	45	52	52	48	50	49	49	49
33	Sal	48	49	49	52	52	52	51	51
34	Eth	45	52	49	49	49	49	48	46
39	Sal	50	52	55	52	50	49	51	54
40	Sal	39	44	43	44	43	42	42	42

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 5

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	41	55	43	43	42	45	43	39
2	Eth	47	40	50	40	35	41	42	45
9	Eth	50	50	40	36	41	48	46	46
10	Eth	42	42	40	42	45	47	46	56
16	Eth	40	41	38	35	33	31	34	42
17	Eth	45	39	39	40	38	53	50	39
18	Eth	40	40	34	39	39	43	37	35
21	Eth	47	50	45	40	44	45	41	39
22	Eth	48	44	42	38	45	42	45	40
29	Eth	49	47	43	44	39	42	42	40
30	Eth	46	50	42	45	39	38	49	53
36	Eth	46	42	35	35	37	38	37	39
37	Eth	49	49	41	42	45	42	40	45
38	Eth	47	48	40	36	40	42	44	41
7	Eth	52	43	38	42	32	36	38	40
8	Eth	49	47	38	45	42	45	46	46
15	Eth	38	40	39	40	41	38	40	31
27	Eth	45	39	36	35	34	34	39	38
28	Eth	45	45	40	42	41	42	42	41
35	Eth	51	56	37	39	43	52	43	49
3	Sal	46	49	45	45	45	45	46	46
4	Sal	44	48	44	43	53	45	42	44
5	Sal	48	58	47	47	49	48	47	46
6	Sal	48	52	55	60	55	56	55	55
11	Sal	43	46	47	43	45	50	50	52
12	Sal	51	56	50	50	50	60	46	57
13	Sal	48	52	50	49	50	50	49	50
14	Sal	41	49	44	43	47	40	49	42
19	Sal	52	50	51	49	47	48	46	49
20	Sal	44	44	44	47	42	49	47	47
23	Sal	49	49	50	52	53	52	51	49
24	Sal	53	51	54	55	50	49	50	52
25	Sal	49	54	54	57	52	53	52	53
26	Sal	44	49	45	42	45	45	42	45
31	Sal	46	54	48	45	54	49	52	52
32	Sal	52	53	52	52	50	51	47	55
33	Sal	48	49	55	52	49	55	54	53
34	Sal	44	49	46	46	45	48	53	52
39	Sal	51	52	53	54	54	62	54	52
40	Sal	45	45	45	45	46	44	45	47

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 6

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	46	45	36	45	40	38	44
2	Eth	44	45	34	38	38	36	38	39
9	Eth	46	48	40	46	45	43	54	49
10	Eth	44	48	41	39	39	45	42	40
16	Eth	42	32	34	33	31	36	41	37
17	Eth	42	44	41	36	39	40	43	40
18	Eth	43	41	39	36	40	39	39	41
21	Eth	47	44	40	42	42	38	39	41
22	Eth	48	45	39	38	40	48	42	45
29	Eth	48	47	42	41	43	43	48	47
30	Eth	48	57	49	42	48	50	44	48
36	Eth	48	43	39	36	37	36	40	36
37	Eth	40	45	39	34	43	37	42	42
38	Eth	48	47	40	39	39	40	43	40
7	Eth	49	38	37	40	36	37	39	37
8	Eth	40	41	40	41	40	42	38	43
15	Eth	38	37	32	38	31	33	34	35
27	Eth	46	45	40	34	38	38	37	35
28	Eth	50	45	44	47	45	43	45	45
35	Eth	51	46	45	45	45	44	49	44
3	Sal	47	43	46	48	48	50	50	48
4	Sal	46	42	43	45	50	46	43	47
5	Sal	45	46	43	50	48	49	51	52
6	Sal	46	52	55	52	51	50	56	55
11	Sal	43	46	48	48	50	52	46	46
12	Sal	52	54	56	50	54	49	52	55
13	Sal	50	59	49	56	48	49	59	57
14	Sal	46	51	44	44	57	50	48	47
19	Sal	44	46	50	48	56	49	48	50
20	Sal	42	50	46	40	47	48	43	50
23	Sal	50	50	53	50	52	50	50	54
24	Sal	46	52	45	48	49	50	49	49
25	Sal	49	54	55	55	52	52	52	53
26	Sal	48	49	46	48	50	50	50	46
31	Sal	47	48	51	51	49	50	52	50
32	Sal	49	49	51	48	47	48	51	53
33	Sal	50	49	52	50	52	56	49	50
34	Sal	46	44	50	48	54	51	49	51
39	Sal	55	54	52	54	56	56	52	50
40	Sal	42	48	49	48	50	45	48	45

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 7

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	42	38	39	42	42	47	43	42
2	Eth	41	40	38	30	34	35	32	43
9	Eth	46	43	39	36	37	40	40	42
10	Eth	40	32	33	32	35	31	34	33
16	Eth	43	40	35	38	39	49	38	42
17	Eth	39	44	36	45	34	34	43	46
18	Eth	41	39	35	34	35	32	39	37
21	Eth	44	44	35	37	37	36	37	41
22	Eth	46	48	45	39	40	48	42	40
29	Eth	52	53	39	40	42	44	48	45
30	Eth	49	47	44	42	49	41	42	42
36	Eth	53	49	44	40	39	39	39	39
37	Eth	46	42	39	35	39	39	41	38
38	Eth	49	48	42	39	42	40	42	41
7	Eth	46	47	44	39	45	38	42	50
8	Eth	47	39	37	35	39	40	41	40
15	Eth	39	42	35	38	42	37	39	38
27	Eth	43	39	33	31	31	29	32	31
28	Eth	45	48	47	52	50	52	45	45
35	Eth	45	43	49	50	46	43	48	48
3	Sal	44	50	48	50	51	51	47	51
4	Sal	52	46	46	46	52	50	50	51
5	Sal	48	50	50	51	50	51	50	50
6	Sal	50	53	49	47	54	50	57	54
11	Sal	40	43	48	47	48	48	50	50
12	Sal	50	50	49	50	53	52	54	49
13	Sal	46	54	60	54	57	53	53	54
14	Sal	53	50	50	53	48	50	49	52
19	Sal	43	48	45	45	53	48	50	51
20	Sal	45	42	46	44	46	51	48	56
23	Sal	51	54	52	48	51	58	53	49
24	Sal	48	49	47	49	49	45	49	50
25	Sal	50	52	53	50	52	54	49	50
26	Sal	40	43	48	47	43	49	45	44
31	Sal	44	49	48	49	50	50	52	49
32	Sal	48	48	45	52	49	55	55	58
33	Sal	46	49	61	47	47	49	49	48
34	Sal	42	49	43	47	45	45	48	48
39	Sal	54	62	50	59	58	52	52	53
40	Sal	38	44	45	43	51	45	50	46

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 8

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	43	40	37	37	48	41	48	43
2	Eth	46	41	40	37	38	36	43	37
9	Eth	49	44	36	38	36	36	40	45
10	Eth	45	44	40	41	42	39	43	45
16	Eth	45	40	41	42	39	40	40	39
17	Eth	40	37	41	36	40	40	38	36
18	Eth	40	37	43	39	34	39	40	39
21	Eth	51	47	42	43	41	42	42	44
22	Eth	46	48	43	43	41	41	47	46
29	Eth	45	42	44	42	40	48	49	45
30	Eth	52	54	56	49	46	53	49	49
36	Eth	49	45	35	35	34	35	39	38
37	Eth	43	41	39	40	43	42	40	44
38	Eth	45	43	42	40	38	40	39	37
7	Eth	45	55	46	45	39	42	46	50
8	Eth	39	38	30	35	35	37	39	38
15	Eth	39	41	39	31	31	36	39	34
27	Eth	39	49	38	33	36	37	39	33
28	Eth	45	45	42	37	38	45	42	39
35	Eth	47	45	42	39	41	44	42	39
3	Sal	50	48	50	50	53	53	47	50
4	Sal	44	44	45	46	44	44	46	46
5	Sal	46	50	55	50	44	45	47	47
6	Sal	48	50	50	48	53	52	60	50
11	Sal	38	43	42	43	42	45	42	44
12	Sal	46	50	50	46	47	47	50	54
13	Sal	51	56	54	57	57	48	52	57
14	Sal	39	40	43	48	52	54	53	47
19	Sal	45	44	50	47	52	47	45	50
20	Sal	41	45	43	43	46	42	50	49
23	Sal	49	54	53	49	58	55	50	52
24	Sal	48	51	46	48	53	49	48	48
25	Sal	43	48	49	49	52	49	48	52
26	Sal	36	37	42	39	39	45	41	42
31	Sal	46	49	52	47	46	50	53	49
32	Sal	50	52	48	52	52	56	50	56
33	Sal	51	51	52	49	52	53	49	49
34	Sal	42	45	45	43	44	44	49	44
39	Sal	45	50	49	52	50	49	52	52
40	Sal	42	41	42	44	44	45	46	48

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Development, Day 9
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	44	44	40	48	39	40	41
2	Eth	42	41	36	36	38	35	44	43
9	Eth	45	40	36	36	36	34	39	37
10	Eth	40	42	43	43	43	40	39	44
16	Eth	49	39	36	36	39	43	36	39
17	Eth	41	39	34	34	32	34	32	40
18	Eth	40	38	35	35	35	36	38	39
21	Eth	46	46	42	37	41	42	43	48
22	Eth	47	43	40	39	40	45	43	46
29	Eth	52	49	53	52	48	46	46	52
30	Eth	49	50	49	45	44	46	46	45
36	Eth	48	46	40	37	36	36	45	40
37	Eth	49	46	48	38	46	39	46	38
38	Eth	45	44	43	40	46	41	49	49
7	Eth	45	40	33	33	40	36	40	43
8	Eth	40	37	33	33	32	32	36	39
15	Eth	38	42	38	38	39	38	39	40
27	Eth	40	46	37	38	42	38	41	43
28	Eth	44	42	45	42	37	41	45	45
35	Eth	52	57	45	41	46	45	45	46
3	Sal	46	50	46	46	49	50	50	54
4	Sal	44	46	43	43	42	46	43	49
5	Sal	42	40	45	45	47	48	48	46
6	Sal	47	50	48	48	50	54	53	53
11	Sal	45	42	46	46	51	48	46	43
12	Sal	46	52	50	50	54	47	50	54
13	Sal	50	47	55	55	60	53	51	60
14	Sal	50	47	51	51	49	56	48	51
19	Sal	48	47	48	48	49	48	50	51
20	Sal	45	48	55	55	47	48	47	50
23	Sal	51	47	52	52	54	53	52	52
24	Sal	49	47	54	48	47	53	49	49
25	Sal	50	54	52	58	56	56	56	57
26	Sal	46	46	46	53	49	46	53	47
31	Sal	43	46	49	50	52	49	48	49
32	Sal	52	55	52	58	56	50	53	51
33	Sal	48	53	49	49	49	51	52	55
34	Sal	41	42	51	48	48	47	44	45
39	Sal	48	51	51	55	56	49	59	56
40	Sal	46	45	47	50	47	47	47	45

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 10

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	37	40	36	39	39	40	40
2	Eth	48	41	43	36	39	44	38	38
9	Eth	48	49	53	50	47	52	51	48
10	Eth	43	44	46	44	41	50	40	52
16	Eth	44	42	38	37	34	47	40	40
17	Eth	42	44	39	36	37	31	35	39
18	Eth	44	46	40	39	42	43	37	38
21	Eth	46	43	39	42	43	41	39	41
22	Eth	48	47	45	42	46	47	49	42
29	Eth	50	53	42	40	42	49	46	42
30	Eth	53	57	57	53	48	49	48	47
36	Eth	45	49	34	32	38	34	36	37
37	Eth	49	45	39	42	39	40	40	39
38	Eth	45	40	42	41	45	44	42	44
7	Eth	50	50	48	48	47	47	46	46
8	Eth	44	43	38	39	50	36	37	46
15	Eth	38	39	40	37	40	36	40	38
27	Eth	42	35	37	35	36	41	40	39
28	Eth	48	50	40	39	42	42	43	44
35	Eth	50	56	47	55	44	58	46	50
3	Sal	46	50	51	52	49	52	50	45
4	Sal	43	43	45	42	45	42	46	46
5	Sal	46	41	42	42	46	46	47	50
6	Sal	51	51	56	50	50	54	54	54
11	Sal	48	49	47	50	46	47	46	48
12	Sal	51	55	53	51	51	56	53	52
13	Sal	48	47	48	52	53	54	50	55
14	Sal	46	55	51	52	50	52	52	49
19	Sal	47	50	46	49	50	54	51	53
20	Sal	43	40	50	40	49	45	50	47
23	Sal	51	54	54	51	49	51	54	52
24	Sal	48	50	49	50	48	48	49	49
25	Sal	49	53	50	48	54	51	53	55
26	Sal	49	54	52	51	59	51	54	52
31	Sal	46	46	50	52	51	49	50	53
32	Sal	50	58	53	53	57	56	53	59
33	Sal	48	54	49	49	50	51	51	52
34	Sal	49	46	45	45	44	46	46	47
39	Sal	51	51	55	51	53	53	53	52
40	Sal	46	47	44	48	47	47	48	48

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Development, Day 11
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	40	40	39	43	44	46	44
2	Eth	51	44	34	35	31	34	33	36
9	Eth	42	41	35	40	36	34	33	35
10	Eth	42	39	44	41	40	43	42	40
16	Eth	40	51	37	35	38	43	33	41
17	Eth	37	40	35	35	48	46	40	38
18	Eth	41	41	38	33	33	33	35	33
21	Eth	51	50	47	45	44	42	43	44
22	Eth	49	54	46	42	42	45	42	46
29	Eth	48	47	42	46	49	45	45	46
30	Eth	51	52	44	45	44	52	48	49
36	Eth	50	46	36	39	42	37	39	38
37	Eth	51	45	45	43	43	41	46	42
38	Eth	45	46	42	41	41	42	42	44
7	Eth	45	41	39	41	41	43	44	46
8	Eth	45	43	41	40	38	38	38	38
15	Eth	41	48	34	33	39	40	38	40
27	Eth	42	46	39	39	39	46	37	40
28	Eth	45	55	39	45	44	46	45	48
35	Eth	48	46	42	49	50	45	52	44
3	Sal	41	48	45	46	53	50	50	46
4	Sal	43	43	42	43	43	44	44	50
5	Sal	46	50	44	45	46	46	48	44
6	Sal	47	47	50	47	47	48	49	50
11	Sal	43	44	47	47	39	46	48	45
12	Sal	48	51	50	48	45	50	45	45
13	Sal	39	48	47	50	47	54	48	50
14	Sal	41	42	44	46	44	47	44	43
19	Sal	49	48	50	54	48	50	49	54
20	Sal	44	41	44	47	43	43	50	41
23	Sal	50	52	49	51	55	51	55	49
24	Sal	48	49	46	49	47	49	49	48
25	Sal	47	51	48	49	49	50	50	48
26	Sal	45	46	53	45	51	52	52	54
31	Sal	52	51	50	52	50	51	51	51
32	Sal	52	56	56	55	59	54	56	59
33	Sal	50	51	54	52	52	49	52	53
34	Sal	47	46	45	52	47	49	45	49
39	Sal	46	52	51	52	52	52	52	59
40	Sal	47	43	49	45	50	49	49	49

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 12

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	45	40	40	47	45	44	46
2	Eth	47	44	41	39	39	44	38	36
9	Eth	50	47	40	39	40	36	37	36
10	Eth	45	44	50	46	40	43	47	50
16	Eth	49	43	40	43	41	43	53	47
17	Eth	42	41	43	39	40	39	42	36
18	Eth	46	44	40	36	40	36	39	37
21	Eth	47	53	48	46	45	40	44	42
22	Eth	50	49	43	40	47	46	47	44
29	Eth	48	50	42	41	42	49	49	48
30	Eth	50	50	41	42	50	41	50	45
36	Eth	50	48	41	41	42	40	43	43
37	Eth	48	43	39	40	42	42	40	41
38	Eth	49	50	45	44	44	43	50	45
7	Eth	40	41	36	35	37	41	38	40
8	Eth	45	41	35	35	34	39	42	42
15	Eth	42	42	40	45	44	42	42	40
27	Eth	43	50	40	35	42	38	45	44
28	Eth	46	43	43	42	48	42	44	44
35	Eth	49	47	43	43	44	46	46	53
3	Sal	50	54	53	46	53	55	50	49
4	Sal	43	44	50	51	49	52	50	52
5	Sal	45	50	47	50	46	43	49	48
6	Sal	50	53	55	53	56	50	57	50
11	Sal	44	44	43	46	46	46	44	44
12	Sal	51	50	52	54	56	55	50	55
13	Sal	43	47	46	55	46	43	54	46
14	Sal	46	46	46	50	45	50	53	49
19	Sal	43	46	51	47	46	50	49	50
20	Sal	43	47	50	54	50	53	54	50
23	Sal	46	50	50	48	53	50	50	50
24	Sal	45	51	46	47	46	49	53	46
25	Sal	45	46	49	47	49	52	49	49
26	Sal	45	47	45	53	56	50	49	49
31	Sal	50	49	55	55	55	55	52	51
32	Sal	52	53	59	50	50	52	50	53
33	Sal	48	51	46	53	50	52	49	49
34	Sal	42	43	44	43	43	44	49	49
39	Sal	50	51	53	53	52	50	53	51
40	Sal	43	47	47	44	45	46	46	46

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 13

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	45	43	39	40	37	39	45
2	Eth	49	46	43	43	42	37	38	38
9	Eth	41	46	37	38	37	40	43	37
10	Eth	47	46	43	42	47	43	44	42
16	Eth	50	48	45	50	50	46	53	55
17	Eth	33	34	32	29	31	33	37	38
18	Eth	36	40	38	39	45	40	39	40
21	Eth	46	48	43	42	41	41	43	40
22	Eth	48	50	53	47	47	46	43	45
29	Eth	49	54	49	42	47	48	48	50
30	Eth	52	56	47	49	47	45	50	50
36	Eth	52	55	44	42	42	42	41	44
37	Eth	49	52	45	45	45	44	54	51
38	Eth	43	45	43	40	40	42	44	45
7	Eth	44	42	37	40	40	44	37	39
8	Eth	46	40	37	39	39	40	41	41
15	Eth	47	36	43	34	35	37	39	40
27	Eth	41	44	35	38	40	38	39	42
28	Eth	54	56	47	44	41	46	49	49
35	Eth	49	52	48	46	46	48	48	55
3	Sal	51	50	54	54	54	61	53	58
4	Sal	44	50	49	51	50	54	51	41
5	Sal	47	44	44	45	49	44	52	48
6	Sal	48	50	59	50	60	58	51	50
11	Sal	44	47	46	46	47	44	45	43
12	Sal	49	60	54	55	50	50	53	52
13	Sal	44	53	50	48	52	49	51	58
14	Sal	45	51	45	43	50	44	46	51
19	Sal	43	44	48	45	54	50	51	45
20	Sal	44	46	43	43	48	49	51	46
23	Sal	52	50	52	53	53	51	54	53
24	Sal	46	45	47	51	49	52	46	45
25	Sal	49	50	46	49	52	50	51	51
26	Sal	43	49	49	51	55	48	50	55
31	Sal	51	52	54	54	54	50	52	54
32	Sal	48	56	51	52	52	46	59	51
33	Sal	50	50	51	52	52	50	54	53
34	Sal	48	54	46	46	46	48	50	51
39	Sal	55	52	55	55	55	62	52	55
40	Sal	41	49	48	51	48	45	47	49

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Development, Day 14
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	43	43	49	47	45	46	50	50
2	Eth	46	44	45	45	42	38	39	41
9	Eth	40	40	34	35	34	34	34	38
10	Eth	45	47	42	40	41	38	43	43
16	Eth	50	43	40	39	37	39	39	37
17	Eth	40	42	39	37	35	34	37	40
18	Eth	42	40	39	36	34	37	40	40
21	Eth	45	48	45	44	42	44	45	41
22	Eth	49	45	45	40	41	41	45	41
29	Eth	48	46	45	41	43	47	54	43
30	Eth	51	55	51	51	51	55	51	49
36	Eth	51	47	45	41	43	39	43	41
37	Eth	41	48	40	35	42	36	41	40
38	Eth	45	46	35	37	42	39	40	39
7	Eth	34	31	29	32	32	32	31	36
8	Eth	46	37	34	31	37	36	36	32
15	Eth	41	37	37	36	37	34	36	37
27	Eth	42	44	36	33	35	36	38	44
28	Eth	45	44	38	39	42	39	44	43
35	Eth	45	44	51	50	54	51	49	59
3	Sal	49	46	50	53	50	53	57	46
4	Sal	46	52	50	52	51	50	47	50
5	Sal	44	45	47	44	44	47	50	50
6	Sal	52	56	52	52	51	52	57	54
11	Sal	42	50	45	47	50	44	47	40
12	Sal	49	54	50	54	59	48	48	53
13	Sal	36	44	41	41	42	46	45	46
14	Sal	38	50	43	42	42	43	46	48
19	Sal	50	51	51	52	54	52	54	56
20	Sal	45	43	50	46	40	49	51	56
23	Sal	49	50	51	52	51	51	50	55
24	Sal	45	48	48	49	44	44	44	46
25	Sal	48	52	51	54	53	50	55	50
26	Sal	45	45	54	48	48	51	50	51
31	Sal	49	51	49	45	45	47	50	50
32	Sal	45	49	51	48	50	47	51	54
33	Sal	44	47	49	51	51	51	48	52
34	Sal	47	46	47	46	47	48	48	44
39	Sal	43	42	45	46	48	51	50	49
40	Sal	42	41	44	40	44	46	44	44

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 15

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	40	43	38	40	45	47	50
2	Eth	41	38	39	32	39	38	40	40
9	Eth	41	44	37	39	36	35	45	41
10	Eth	43	39	39	42	38	37	38	39
16	Eth	47	45	44	54	51	45	44	50
17	Eth	39	40	33	32	35	35	36	35
18	Eth	43	39	39	37	38	42	36	42
21	Eth	50	48	44	42	43	41	41	43
22	Eth	46	52	51	51	44	54	49	48
29	Eth	48	49	48	43	48	46	44	48
30	Eth	52	53	51	47	45	44	45	46
36	Eth	47	51	40	40	39	39	37	41
37	Eth	48	46	48	38	40	41	41	44
38	Eth	41	43	41	39	42	44	40	42
7	Eth	43	43	39	37	40	44	40	38
8	Eth	50	44	37	37	35	37	48	38
15	Eth	45	40	36	37	37	36	39	38
27	Eth	46	44	39	37	40	39	40	43
28	Eth	47	47	41	41	45	42	42	43
35	Eth	52	53	50	47	48	46	48	51
3	Sal	50	48	47	50	51	50	51	54
4	Sal	48	46	52	48	53	51	50	50
5	Sal	48	48	50	51	46	49	49	48
6	Sal	52	54	53	53	55	55	56	56
11	Sal	44	44	45	48	49	49	51	44
12	Sal	56	52	51	56	51	54	52	51
13	Sal	48	54	47	50	52	53	53	52
14	Sal	46	51	50	52	51	51	50	53
19	Sal	50	51	51	50	50	55	55	55
20	Sal	43	49	52	53	53	48	47	51
23	Sal	44	50	48	48	50	51	50	51
24	Sal	45	45	48	46	44	44	50	46
25	Sal	48	50	51	52	51	51	51	49
26	Sal	47	48	45	42	47	48	48	46
31	Sal	44	51	49	44	48	48	48	47
32	Sal	42	44	48	44	41	45	49	44
33	Sal	48	48	49	50	48	51	51	48
34	Sal	46	47	50	50	51	44	49	50
39	Sal	44	46	45	44	43	49	48	46
40	Sal	42	40	41	44	43	41	43	42

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON

Tolerance Development, Day 16

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	43	41	40	41	42	41	43	42
2	Eth	46	44	43	37	42	36	46	40
9	Eth	45	45	41	37	38	38	36	40
10	Eth	41	44	41	40	41	38	40	40
16	Eth	43	38	39	40	42	40	42	40
17	Eth	34	46	34	34	37	38	44	40
18	Eth	46	44	40	39	40	44	39	40
21	Eth	48	50	42	42	42	41	47	44
22	Eth	48	48	44	42	51	45	50	44
29	Eth	43	47	40	39	45	40	46	43
30	Eth	47	45	43	40	39	40	39	43
36	Eth	48	46	44	40	38	38	38	39
37	Eth	45	49	44	44	49	48	45	42
38	Eth	44	46	44	40	39	39	40	39
7	Eth	49	41	37	38	38	39	46	41
8	Eth	45	41	39	39	39	38	40	46
15	Eth	40	37	38	37	40	40	39	39
27	Eth	46	45	40	38	41	45	42	40
28	Eth	45	46	43	45	47	44	44	44
35	Eth	46	46	47	45	43	42	50	44
3	Sal	48	52	51	54	55	51	50	51
4	Sal	43	49	45	51	46	46	47	46
5	Sal	46	48	51	44	46	48	43	46
6	Sal	50	49	48	52	51	51	48	50
11	Sal	42	44	44	46	50	51	52	44
12	Sal	52	50	54	50	47	49	50	50
13	Sal	41	48	49	51	46	53	50	51
14	Sal	44	45	48	50	51	50	45	53
19	Sal	45	49	53	49	50	56	50	53
20	Sal	47	52	47	54	52	45	49	50
23	Sal	49	50	47	47	46	48	45	52
24	Sal	44	45	45	46	50	44	48	44
25	Sal	44	47	47	48	52	48	50	48
26	Sal	43	44	51	43	47	50	46	43
31	Sal	46	45	48	46	46	46	50	44
32	Sal	46	45	45	49	48	50	48	48
33	Sal	39	43	44	43	44	43	47	45
34	Sal	43	42	42	43	47	41	45	41
39	Sal	46	45	47	47	44	49	48	48
40	Sal	45	44	43	43	44	42	43	42

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 17

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	47	47	44	44	50	46	44
2	Eth	49	49	45	44	42	41	40	40
9	Eth	43	46	39	39	37	41	38	39
10	Eth	41	39	43	53	42	44	41	40
16	Eth	46	42	39	39	38	37	41	46
17	Eth	37	39	43	36	31	36	34	35
18	Eth	42	40	38	36	35	37	38	40
21	Eth	49	53	51	48	48	47	48	48
22	Eth	48	51	50	48	44	46	48	50
29	Eth	49	48	44	47	47	50	49	48
30	Eth	48	54	51	47	42	47	48	49
36	Eth	48	49	42	43	42	42	44	47
37	Eth	46	44	50	43	49	44	53	49
38	Eth	48	49	46	42	43	42	43	42
7	Eth	48	54	43	51	53	48	48	45
8	Eth	43	42	35	37	37	44	42	39
15	Eth	43	44	39	40	40	39	40	41
27	Eth	43	49	41	43	39	39	39	42
28	Eth	48	49	43	44	40	39	40	40
35	Eth	49	49	49	44	43	44	48	44
3	Sal	48	53	52	55	54	53	53	54
4	Sal	46	49	52	53	50	50	53	51
5	Sal	47	44	50	49	44	47	49	49
6	Sal	52	55	56	50	60	54	52	55
11	Sal	40	45	44	46	48	46	46	48
12	Sal	49	52	50	51	50	49	50	48
13	Sal	38	40	41	46	47	51	46	43
14	Sal	43	50	47	47	44	47	50	45
19	Sal	49	50	47	54	57	52	54	53
20	Sal	47	47	51	50	46	53	51	51
23	Sal	49	50	51	51	50	51	53	51
24	Sal	48	49	50	48	50	50	50	51
25	Sal	49	52	52	50	53	52	51	51
26	Sal	53	59	53	56	54	54	53	57
31	Sal	49	52	51	51	51	50	54	53
32	Sal	50	49	52	57	56	50	59	56
33	Sal	49	48	48	52	50	48	49	50
34	Sal	48	48	49	48	50	49	47	47
39	Sal	49	48	47	52	51	50	51	50
40	Sal	45	47	46	48	48	45	47	45

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 18

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	43	46	43	42	42	39	41	41
2	Eth	44	47	43	45	46	41	46	41
9	Eth	43	45	39	42	40	39	39	40
10	Eth	46	52	46	41	43	39	39	37
16	Eth	48	56	46	43	45	43	43	43
17	Eth	39	42	39	45	34	39	34	45
18	Eth	48	41	45	51	45	46	42	40
21	Eth	48	49	46	45	48	44	46	46
22	Eth	48	47	44	41	41	49	48	48
29	Eth	49	51	50	54	51	50	45	49
30	Eth	52	54	51	45	50	48	51	47
36	Eth	50	48	44	45	45	43	44	44
37	Eth	51	49	47	45	45	45	44	44
38	Eth	45	51	43	43	48	45	42	45
7	Eth	54	48	45	46	46	47	46	49
8	Eth	49	54	51	43	46	42	43	44
15	Eth	44	44	42	40	43	42	45	40
27	Eth	48	45	42	42	43	47	44	44
28	Eth	47	48	44	44	45	49	46	49
35	Eth	50	52	47	47	48	49	54	48
3	Sal	51	49	51	50	52	50	49	48
4	Sal	43	48	50	51	52	46	48	50
5	Sal	49	47	51	46	49	50	49	51
6	Sal	54	59	57	57	57	57	62	55
11	Sal	50	46	50	50	49	51	53	50
12	Sal	47	54	52	53	52	51	52	51
13	Sal	45	57	47	47	46	50	53	53
14	Sal	49	50	46	52	49	49	50	50
19	Sal	50	50	50	53	50	52	50	52
20	Sal	47	54	58	49	45	51	48	53
23	Sal	49	51	52	54	55	50	51	52
24	Sal	49	50	51	51	52	51	48	51
25	Sal	49	50	51	49	50	50	51	49
26	Sal	46	51	45	48	46	48	45	52
31	Sal	49	50	51	51	52	52	52	51
32	Sal	47	51	52	51	49	49	52	52
33	Sal	49	52	51	50	54	51	49	48
34	Sal	48	50	51	51	51	49	47	53
39	Sal	51	49	49	50	50	50	51	50
40	Sal	46	48	42	44	47	46	46	44

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Development, Day 19
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	44	40	41	45	42	46	47
2	Eth	42	48	41	41	36	37	37	43
9	Eth	43	48	41	39	39	38	37	41
10	Eth	43	41	41	40	45	41	44	42
16	Eth	50	49	41	40	41	40	50	41
17	Eth	40	48	39	39	37	39	40	37
18	Eth	45	40	39	38	40	44	41	40
21	Eth	45	49	47	46	50	46	43	47
22	Eth	50	49	50	49	48	46	48	47
29	Eth	46	47	44	44	48	48	49	48
30	Eth	48	44	45	41	42	46	51	48
36	Eth	50	49	44	43	42	42	41	44
37	Eth	50	46	54	46	51	48	48	44
38	Eth	45	48	44	43	46	48	46	45
7	Eth	49	48	39	40	41	40	43	48
8	Eth	46	42	40	40	38	43	41	42
15	Eth	46	46	46	43	47	50	47	46
27	Eth	40	43	39	36	36	35	33	35
28	Eth	47	49	48	43	50	47	46	43
35	Eth	48	50	45	51	54	49	51	48
3	Sal	49	51	46	47	50	51	50	48
4	Sal	43	42	44	47	47	43	49	43
5	Sal	45	47	45	46	43	47	44	47
6	Sal	53	54	57	55	54	54	58	53
11	Sal	45	51	51	50	53	52	48	53
12	Sal	50	50	54	55	50	54	54	50
13	Sal	51	55	50	53	47	53	50	50
14	Sal	47	49	46	49	49	51	46	50
19	Sal	50	50	52	52	51	53	53	48
20	Sal	52	58	59	53	54	56	51	50
23	Sal	49	50	54	54	54	52	55	50
24	Sal	47	47	47	50	50	50	48	50
25	Sal	49	49	51	50	50	50	52	49
26	Sal	45	43	43	44	48	41	41	43
31	Sal	48	51	53	49	51	55	55	50
32	Sal	52	55	59	55	54	52	52	55
33	Sal	48	50	50	48	49	50	48	47
34	Sal	41	47	46	45	46	45	44	51
39	Sal	45	50	47	47	48	50	49	50
40	Sal	45	44	44	45	42	45	44	45

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON

Tolerance Development, Day 20

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	43	42	41	43	45	43	49	50
2	Eth	46	44	42	41	38	38	39	38
9	Eth	43	42	40	40	37	39	40	36
10	Eth	47	49	46	47	51	47	53	48
16	Eth	49	42	43	41	42	40	40	41
17	Eth	37	43	38	36	40	35	39	34
18	Eth	45	43	41	42	40	42	40	39
21	Eth	48	48	46	47	43	43	43	43
22	Eth	48	49	50	45	46	47	48	47
29	Eth	46	50	45	44	45	45	46	45
30	Eth	48	49	42	40	41	43	46	44
36	Eth	48	44	40	40	40	40	41	43
37	Eth	42	40	39	39	39	40	36	38
38	Eth	40	43	42	42	41	39	40	42
7	Eth	46	44	40	42	40	47	42	43
8	Eth	49	46	44	42	44	43	42	44
15	Eth	44	40	39	40	39	43	41	42
27	Eth	41	44	39	33	33	36	36	37
28	Eth	44	48	46	44	39	44	39	43
35	Eth	45	49	44	41	41	45	45	44
3	Sal	46	49	50	50	49	48	46	49
4	Sal	45	41	49	51	48	49	45	46
5	Sal	44	45	46	46	53	47	50	47
6	Sal	50	53	56	54	58	56	52	51
11	Sal	43	48	49	52	47	44	49	50
12	Sal	48	49	50	47	53	51	56	49
13	Sal	43	40	50	44	54	45	58	43
14	Sal	47	46	46	47	50	49	46	46
19	Sal	47	54	53	54	50	50	50	50
20	Sal	42	47	44	45	45	51	52	45
23	Sal	48	54	49	48	48	52	51	52
24	Sal	48	48	47	45	48	49	49	50
25	Sal	48	48	50	48	50	47	49	51
26	Sal	41	43	45	42	42	44	44	44
31	Sal	43	48	49	45	49	45	46	48
32	Sal	50	51	47	50	48	50	49	50
33	Sal	42	44	44	44	46	48	46	47
34	Sal	41	41	44	41	42	46	43	44
39	Sal	41	44	45	45	45	44	44	45
40	Sal	42	41	44	40	44	40	41	40

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 21

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	42	42	42	43	43	46	45
2	Eth	48	46	42	43	45	47	48	43
9	Eth	41	44	40	38	38	38	37	38
10	Eth	44	43	40	41	39	42	43	44
16	Eth	44	46	43	44	44	45	40	39
17	Eth	40	43	38	35	38	40	37	39
18	Eth	44	42	42	42	46	43	45	41
21	Eth	44	50	47	49	44	40	44	42
22	Eth	45	46	46	43	43	47	44	42
29	Eth	45	47	43	43	44	42	46	44
30	Eth	43	48	41	39	42	43	41	47
36	Eth	44	47	37	37	40	40	39	41
37	Eth	45	46	42	38	41	40	41	41
38	Eth	46	43	43	42	43	44	48	44
7	Eth	47	47	46	45	44	54	45	44
8	Eth	47	44	46	38	42	46	43	43
15	Eth	45	41	41	39	39	40	40	39
27	Eth	46	47	44	40	49	43	42	44
28	Eth	47	46	44	42	43	43	43	43
35	Eth	48	48	45	44	45	48	44	46
3	Sal	45	49	47	50	50	50	52	50
4	Sal	44	49	49	48	51	48	47	46
5	Sal	48	44	45	45	50	48	46	46
6	Sal	54	53	55	57	54	58	56	56
11	Sal	44	46	47	50	46	48	52	50
12	Sal	43	46	52	48	44	43	44	44
13	Sal	46	44	51	49	48	48	47	44
14	Sal	45	49	47	45	47	48	46	44
19	Sal	48	45	53	53	49	51	50	50
20	Sal	43	46	50	46	46	47	46	54
23	Sal	47	45	50	48	49	51	48	48
24	Sal	46	45	47	50	49	45	46	46
25	Sal	47	48	50	47	51	52	50	48
26	Sal	44	45	44	47	46	45	46	44
31	Sal	47	48	48	45	51	47	46	49
32	Sal	44	47	47	49	47	48	48	51
33	Sal	45	47	46	47	48	48	49	47
34	Sal	43	44	45	47	45	46	47	45
39	Sal	40	43	48	52	47	43	42	47
40	Sal	45	40	44	44	42	44	43	41

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Development, Day 22

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	43	45	46	44	45	43	42	50
2	Eth	42	46	39	40	38	39	42	41
9	Eth	42	42	39	40	40	39	41	41
10	Eth	45	42	43	43	44	45	44	46
16	Eth	47	42	40	45	40	50	40	43
17	Eth	39	44	39	38	43	50	42	41
18	Eth	45	45	40	42	42	49	46	48
21	Eth	48	51	46	53	44	46	44	47
22	Eth	47	51	48	45	46	47	43	47
29	Eth	44	48	49	44	45	43	50	47
30	Eth	49	51	50	51	46	50	51	46
36	Eth	46	49	46	40	42	41	42	44
37	Eth	43	42	44	43	44	43	49	47
38	Eth	47	45	42	42	44	44	43	42
7	Eth	50	46	43	43	44	49	48	48
8	Eth	44	45	45	44	42	43	47	42
15	Eth	40	43	42	40	37	42	41	46
27	Eth	44	44	42	41	43	42	46	44
28	Eth	48	47	43	45	44	46	47	44
35	Eth	49	45	50	49	51	49	47	48
3	Sal	46	47	48	49	51	50	51	52
4	Sal	49	47	46	46	49	46	51	52
5	Sal	43	43	46	51	47	49	48	49
6	Sal	50	49	53	52	52	53	52	50
11	Sal	41	45	45	48	44	45	50	48
12	Sal	44	48	49	45	48	49	61	51
13	Sal	47	51	48	57	50	49	45	48
14	Sal	45	45	50	44	47	50	48	50
19	Sal	46	45	47	51	49	49	51	53
20	Sal	48	54	51	51	50	51	52	50
23	Sal	51	49	52	48	49	51	54	51
24	Sal	44	46	49	45	49	47	48	51
25	Sal	47	50	49	51	49	52	52	55
26	Sal	51	50	51	45	45	55	46	53
31	Sal	47	51	53	50	54	51	51	54
32	Sal	52	50	59	50	53	52	55	54
33	Sal	47	49	49	49	54	51	49	51
34	Sal	45	47	46	47	48	46	46	46
39	Sal	44	46	50	44	49	48	47	48
40	Sal	43	43	46	44	45	46	43	45

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Test Day

Slip Angles, Absolute Values

Subj #	Group	Test	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
		Stimulus								
1	Eth	OFF	48	43	42	44	39	41	42	43
16	Eth	OFF	45	38	39	38	39	45	39	42
21	Eth	OFF	47	48	41	39	38	39	41	40
2	Eth	OFF	45	50	46	46	40	38	37	41
18	Eth	OFF	47	45	39	40	40	44	39	41
22	Eth	OFF	48	44	43	43	43	44	42	42
37	Eth	OFF	47	45	41	41	39	37	42	38
36	Eth	OFF	47	42	43	39	36	40	42	41
15	Eth	OFF	43	45	40	45	44	39	42	42
35	Eth	OFF	50	51	43	45	47	46	45	47
30	Eth	ON	47	48	50	44	45	49	43	51
29	Eth	ON	48	51	48	48	45	47	46	45
38	Eth	ON	44	47	41	39	40	43	49	43
10	Eth	ON	48	48	46	48	48	47	50	53
9	Eth	ON	42	48	42	40	40	39	39	40
17	Eth	ON	45	46	43	50	45	50	41	48
28	Eth	ON	48	52	44	43	46	46	45	46
7	Eth	ON	48	47	45	45	46	47	45	44
8	Eth	ON	44	48	41	40	41	41	42	41
27	Eth	ON	42	44	43	42	42	43	41	40
31	Sal	OFF	50	46	41	36	39	39	38	37
32	Sal	OFF	46	39	35	37	37	36	37	39
40	Sal	OFF	44	41	41	39	40	38	40	38
24	Sal	OFF	47	37	39	35	37	35	39	42
11	Sal	OFF	49	45	43	39	38	39	37	37
23	Sal	OFF	46	39	34	37	36	36	36	39
19	Sal	OFF	46	45	41	41	45	41	39	40
3	Sal	OFF	50	46	39	42	38	39	38	37
12	Sal	OFF	46	49	46	46	47	46	41	39
4	Sal	OFF	44	38	42	38	35	39	38	35
6	Sal	ON	49	44	37	39	35	37	36	37
39	Sal	ON	49	45	39	38	35	35	41	34
5	Sal	ON	44	47	42	43	46	42	39	39
25	Sal	ON	46	39	36	35	34	36	39	34
34	Sal	ON	45	41	35	36	35	37	35	35
33	Sal	ON	48	47	35	32	34	34	39	36
26	Sal	ON	44	37	36	34	38	37	40	40
13	Sal	ON	49	42	37	39	40	42	40	39
14	Sal	ON	45	39	39	34	39	37	40	38
20	Sal	ON	48	42	38	36	35	38	40	37

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Reacquisition, Day 1
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	48	49	42	49	48	48	50
2	Eth	47	42	40	39	42	41	40	40
9	Eth	46	45	42	45	42	42	46	50
10	Eth	47	46	44	46	48	49	49	51
16	Eth	49	47	53	51	47	46	45	45
17	Eth	43	46	45	46	47	41	42	45
18	Eth	48	48	43	44	48	46	44	45
21	Eth	46	45	49	46	49	43	45	47
22	Eth	48	49	49	51	49	49	52	51
29	Eth	46	49	48	49	46	47	49	50
30	Eth	52	51	48	48	49	49	48	50
36	Eth	52	53	46	45	45	44	44	45
37	Eth	45	46	50	42	44	45	46	44
38	Eth	45	48	40	45	42	44	45	43
7	Eth	49	50	46	44	47	46	47	48
8	Eth	45	46	42	42	43	41	44	45
15	Eth	41	44	40	39	42	41	48	42
27	Eth	44	46	42	37	40	44	46	41
28	Eth	48	52	46	46	46	45	52	49
35	Eth	49	53	50	49	51	54	49	53
3	Sal	49	49	50	46	48	51	49	50
4	Sal	45	46	46	45	47	49	49	47
5	Sal	48	48	46	56	48	49	50	49
6	Sal	50	59	52	50	51	53	54	54
11	Sal	50	48	52	54	47	49	50	55
12	Sal	48	46	53	52	51	53	52	57
13	Sal	48	49	50	48	46	50	49	55
14	Sal	46	46	45	49	44	50	50	44
19	Sal	46	49	49	50	54	50	49	51
20	Sal	49	47	52	46	49	46	52	50
23	Sal	48	49	50	54	53	53	53	53
24	Sal	49	48	48	49	47	51	51	50
25	Sal	47	49	49	50	50	51	52	50
26	Sal	48	47	48	51	49	46	48	45
31	Sal	50	51	50	53	54	52	51	52
32	Sal	53	53	51	52	52	52	52	52
33	Sal	50	50	49	50	52	54	52	53
34	Sal	48	47	49	48	50	49	50	51
39	Sal	45	50	48	50	54	52	47	55
40	Sal	46	48	47	49	49	49	46	46

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Reacquisition Day 2
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	51	51	48	49	50	53	48
2	Eth	48	45	44	41	40	41	44	45
9	Eth	45	45	41	42	41	40	46	43
10	Eth	47	49	44	48	46	45	45	45
16	Eth	45	45	42	46	40	43	42	42
17	Eth	40	50	42	44	39	40	42	38
18	Eth	43	42	42	41	41	41	40	40
21	Eth	49	50	49	47	52	52	46	48
22	Eth	50	53	45	51	48	50	56	52
29	Eth	48	50	49	45	50	45	49	45
30	Eth	50	56	49	50	53	49	48	46
36	Eth	48	52	41	41	42	40	38	40
37	Eth	46	45	44	40	41	40	41	43
38	Eth	47	48	56	47	49	48	44	48
7	Eth	44	50	50	44	44	48	53	43
8	Eth	47	50	45	43	43	42	43	45
15	Eth	44	50	49	42	41	48	42	43
27	Eth	44	50	45	41	41	42	45	45
28	Eth	49	52	53	49	50	52	52	51
35	Eth	47	48	50	52	49	54	51	54
3	Sal	49	51	48	48	48	49	48	49
4	Sal	45	49	45	46	46	48	52	46
5	Sal	49	49	48	46	53	49	56	50
6	Sal	51	56	52	53	54	52	50	56
11	Sal	46	48	49	44	46	49	49	47
12	Sal	49	53	58	50	51	53	53	50
13	Sal	46	50	50	52	48	46	49	50
14	Sal	46	49	49	46	46	45	46	45
19	Sal	48	47	52	52	49	49	49	49
20	Sal	46	45	46	49	45	47	49	45
23	Sal	49	49	52	53	50	52	52	54
24	Sal	49	48	50	50	55	55	54	51
25	Sal	48	50	51	51	55	51	50	49
26	Sal	45	47	47	46	50	58	46	51
31	Sal	50	52	53	52	54	54	52	50
32	Sal	47	50	45	49	52	46	55	48
33	Sal	45	51	51	53	48	54	51	49
34	Sal	48	47	48	50	48	55	47	49
39	Sal	44	51	49	53	46	55	48	46
40	Sal	42	44	45	45	45	46	48	43

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
Tolerance Reacquisition, Day 3

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	46	47	45	45	45	46	46
2	Eth	45	48	40	42	36	38	37	39
9	Eth	42	49	46	41	44	42	45	45
10	Eth	49	48	41	41	42	44	45	46
16	Eth	44	48	48	40	42	46	45	43
17	Eth	42	45	41	41	42	42	42	47
18	Eth	46	45	45	47	47	46	46	44
21	Eth	50	47	50	46	48	46	48	45
22	Eth	45	54	49	48	52	52	46	49
29	Eth	47	45	44	46	49	46	48	46
30	Eth	47	50	44	44	44	43	54	49
36	Eth	46	49	41	43	42	41	43	42
37	Eth	44	41	50	41	43	43	45	44
38	Eth	50	48	44	45	45	46	47	48
7	Eth	49	45	42	46	44	44	45	47
8	Eth	45	44	46	42	41	49	48	51
15	Eth	48	49	42	42	43	44	44	42
27	Eth	44	47	46	42	42	45	44	44
28	Eth	46	49	44	41	45	42	45	45
35	Eth	49	50	49	48	44	50	46	44
3	Sal	48	49	46	50	52	46	50	49
4	Sal	46	46	49	46	48	47	49	49
5	Sal	47	50	45	43	56	46	55	45
6	Sal	49	53	50	55	54	60	59	55
11	Sal	48	49	46	50	48	48	51	46
12	Sal	45	48	49	50	51	54	47	52
13	Sal	49	48	49	52	50	48	52	45
14	Sal	43	58	46	45	45	45	46	43
19	Sal	49	53	50	49	51	50	49	51
20	Sal	47	50	52	45	47	49	54	52
23	Sal	49	49	52	53	53	52	56	52
24	Sal	46	48	51	50	53	49	51	49
25	Sal	48	51	49	50	50	49	54	49
26	Sal	46	50	52	49	45	46	48	52
31	Sal	46	48	48	50	54	54	51	49
32	Sal	44	48	42	45	53	50	57	53
33	Sal	48	48	52	50	49	49	52	49
34	Sal	49	48	49	46	48	49	49	50
39	Sal	48	51	51	47	49	56	50	53
40	Sal	44	45	46	45	44	45	43	44

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
 Tolerance Reacquisition, Day 4
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	52	47	51	48	49	52	49
2	Eth	46	53	43	41	40	44	42	45
9	Eth	48	45	44	44	43	45	46	45
10	Eth	50	52	49	49	50	54	46	49
16	Eth	47	46	43	45	46	45	45	42
17	Eth	45	46	41	42	45	45	45	46
18	Eth	47	48	48	49	48	47	48	48
21	Eth	47	51	48	52	49	45	46	46
22	Eth	51	50	52	51	49	49	49	50
29	Eth	49	47	49	46	50	50	49	48
30	Eth	50	52	51	50	50	52	52	53
36	Eth	49	50	44	43	42	42	42	43
37	Eth	41	49	42	42	39	38	39	39
38	Eth	44	49	42	41	42	42	42	46
7	Eth	44	45	42	39	45	45	46	44
8	Eth	48	52	45	47	46	46	48	45
15	Eth	45	49	47	47	47	46	47	44
27	Eth	46	46	45	43	41	46	45	46
28	Eth	50	52	51	50	47	55	49	52
35	Eth	46	50	45	48	49	52	48	53
3	Sal	46	49	46	49	53	50	49	49
4	Sal	45	50	49	49	48	49	49	49
5	Sal	45	44	46	48	50	45	43	46
6	Sal	52	52	57	55	53	51	52	53
11	Sal	47	50	48	50	52	47	47	50
12	Sal	46	52	52	53	51	49	49	56
13	Sal	50	46	46	48	46	49	45	52
14	Sal	46	48	47	46	46	46	45	45
19	Sal	48	49	51	50	48	48	49	49
20	Sal	45	48	49	53	45	48	52	52
23	Sal	52	52	54	54	53	56	49	52
24	Sal	46	50	49	49	53	49	50	51
25	Sal	49	53	46	50	49	53	52	53
26	Sal	48	48	53	57	49	50	52	54
31	Sal	53	53	52	53	51	53	54	55
32	Sal	48	52	52	53	54	57	56	56
33	Sal	47	49	49	46	52	49	52	52
34	Sal	48	49	46	47	49	49	51	49
39	Sal	47	50	48	49	49	49	53	49
40	Sal	43	45	46	49	47	43	46	49

Chapter 4, Experiment 2 - Tolerance Development with Stimulus ON
CR Saline Test Day

Slip Angles, Absolute Values

Subj #	Group	Test	Slip Angles, Absolute Values								
		Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min	
17	Eth	off	46	47	47	50	48	49	46	46	
9	Eth	off	45	48	46	47	49	47	48	48	
30	Eth	off	51	55	53	54	52	53	50	53	
38	Eth	off	49	50	51	50	52	49	51	49	
29	Eth	off	44	48	47	48	47	47	50	48	
10	Eth	off	45	49	49	50	49	48	49	48	
28	Eth	off	48	51	54	52	54	56	51	55	
27	Eth	off	45	48	46	45	48	46	45	48	
8	Eth	off	46	47	49	51	47	48	48	48	
7	Eth	off	49	51	51	51	56	52	50	53	
18	Eth	ON	43	47	49	47	49	48	49	50	
2	Eth	ON	45	49	50	51	51	50	50	54	
21	Eth	ON	48	50	50	51	50	51	52	50	
16	Eth	ON	44	48	45	46	47	50	50	47	
22	Eth	ON	46	54	54	51	51	53	51	52	
36	Eth	ON	47	54	53	52	53	56	51	51	
37	Eth	ON	43	46	47	47	48	48	47	47	
1	Eth	ON	47	50	52	50	49	49	52	49	
15	Eth	ON	42	46	47	48	46	47	48	46	
35	Eth	ON	48	58	53	51	54	52	51	51	
33	Sal	off	48	52	50	51	54	50	50	52	
26	Sal	off	47	50	46	49	47	52	45	50	
39	Sal	off	47	47	51	49	50	52	50	51	
34	Sal	off	49	49	49	48	48	46	47	48	
20	Sal	off	47	53	50	49	49	48	48	45	
25	Sal	off	47	49	50	49	50	50	48	52	
6	Sal	off	52	55	52	55	52	53	56	55	
5	Sal	off	48	47	47	45	49	49	47	47	
13	Sal	off	49	49	51	50	52	53	49	49	
14	Sal	off	44	46	46	45	46	49	50	47	
31	Sal	ON	47	53	54	51	51	50	50	53	
23	Sal	ON	48	51	50	50	49	52	49	54	
3	Sal	ON	47	51	50	49	52	52	50	49	
4	Sal	ON	49	49	46	54	49	46	49	47	
11	Sal	ON	45	43	44	49	47	47	48	48	
19	Sal	ON	45	48	48	50	51	48	47	49	
32	Sal	ON	50	48	54	51	52	54	54	49	
12	Sal	ON	49	49	55	52	55	61	51	56	
24	Sal	ON	45	47	47	47	44	46	48	50	
40	Sal	ON	46	49	45	47	48	50	47	47	

APPENDIX E

Raw data collected for Experiment 3a, Chapter 4

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 1

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	51	46	42	39	39	42	40	41
2	Eth	40	41	38	38	35	35	36	35
3	Eth	47	40	34	38	41	43	41	37
4	Eth	47	41	38	36	41	45	41	38
5	Eth	42	44	44	40	39	46	44	42
6	Eth	49	51	49	49	46	45	44	44
7	Eth	49	44	40	39	41	42	37	49
8	Eth	48	45	42	38	43	42	47	45
9	Eth	47	44	42	37	39	36	37	39
10	Eth	50	50	50	42	46	48	45	45
11	Eth	45	48	34	36	41	43	37	36
12	Eth	45	43	37	35	37	39	37	35
13	Eth	44	46	48	38	44	45	45	40
14	Eth	46	48	37	34	33	37	45	39
15	Eth	46	50	45	38	39	35	44	41
16	Eth	50	44	41	39	38	40	42	40
17	Eth	47	41	45	41	36	43	41	42
18	Eth	40	47	45	43	42	45	36	38
19	Eth	49	40	43	43	36	38	38	37
20	Eth	51	52	52	47	47	45	44	49
21	Eth	49	50	44	43	48	46	43	44
22	Eth	51	42	42	44	42	42	42	45
23	Eth	46	43	38	36	39	39	41	41
24	Eth	47	48	36	44	39	39	38	39
25	Eth	52	46	50	45	45	43	42	50
26	Eth	50	40	40	35	39	40	45	38
27	Eth	50	40	35	34	36	37	46	39
28	Eth	45	49	43	41	45	45	40	39
29	Eth	43	46	38	36	42	36	39	38
30	Eth	47	52	39	37	45	40	50	42
31	Eth	46	46	38	37	41	42	39	38
32	Eth	47	44	48	45	41	44	42	43
1	Sal	44	45	45	43	45	50	45	44
2	Sal	40	41	39	44	40	43	39	48
3	Sal	45	40	40	44	39	40	41	41
4	Sal	37	43	40	42	39	41	37	42
5	Sal	45	42	46	44	44	45	49	45
6	Sal	44	47	46	47	48	48	45	48
7	Sal	47	48	50	46	46	46	49	48
8	Sal	48	44	44	45	44	45	44	45
9	Sal	35	53	39	43	43	46	47	43
10	Sal	40	41	39	39	36	39	37	39
11	Sal	41	44	41	44	39	43	41	44
12	Sal	46	44	41	43	45	44	43	47
13	Sal	35	39	39	39	39	41	46	42
14	Sal	37	36	36	38	39	36	34	35
15	Sal	39	39	44	42	39	44	49	45
16	Sal	40	43	42	45	48	47	46	48

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 2

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	45	43	41	38	39	41	42
2	Eth	45	44	42	38	40	36	44	44
3	Eth	45	40	36	38	38	39	38	39
4	Eth	45	39	34	37	38	36	37	36
5	Eth	45	45	39	39	38	43	38	38
6	Eth	44	45	40	34	40	35	38	36
7	Eth	44	42	40	41	40	39	49	46
8	Eth	48	41	42	44	41	37	39	42
9	Eth	43	46	42	39	39	36	36	37
10	Eth	47	50	42	41	38	41	40	39
11	Eth	40	41	40	32	36	34	35	34
12	Eth	51	46	41	44	42	43	39	42
13	Eth	43	42	41	38	37	41	39	44
14	Eth	49	44	45	42	41	50	49	46
15	Eth	49	45	40	37	37	44	40	39
16	Eth	42	44	34	34	40	37	39	37
17	Eth	44	40	44	42	39	40	39	39
18	Eth	42	48	46	40	44	37	43	41
19	Eth	52	40	37	35	37	36	37	36
20	Eth	52	55	56	47	42	48	44	42
21	Eth	45	55	45	45	45	51	43	41
22	Eth	45	42	37	33	34	33	39	36
23	Eth	47	41	40	39	38	39	39	40
24	Eth	50	47	48	40	44	41	44	51
25	Eth	47	38	39	40	35	38	37	40
26	Eth	45	40	42	41	43	43	40	40
27	Eth	46	46	41	34	36	34	36	34
28	Eth	39	40	40	37	35	33	32	35
29	Eth	42	40	42	41	40	36	40	46
30	Eth	44	44	47	43	42	39	42	40
31	Eth	36	39	31	28	26	29	39	31
32	Eth	39	40	39	39	38	38	38	39
1	Sal	42	46	47	45	43	45	45	45
2	Sal	36	38	41	41	39	42	41	39
3	Sal	36	42	41	41	38	39	39	41
4	Sal	37	35	36	32	34	35	42	39
5	Sal	39	43	40	39	46	41	43	40
6	Sal	38	44	46	43	45	45	45	50
7	Sal	48	48	49	48	45	49	48	45
8	Sal	40	46	43	43	42	44	46	45
9	Sal	44	42	44	46	43	44	45	49
10	Sal	37	42	40	38	43	41	44	39
11	Sal	29	39	40	34	39	36	43	41
12	Sal	39	43	43	44	45	40	44	46
13	Sal	34	34	41	40	36	41	40	38
14	Sal	34	31	30	35	41	32	39	30
15	Sal	41	40	46	42	40	42	40	47
16	Sal	40	50	46	45	44	41	42	44

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 3

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	45	38	40	39	42	43	44
2	Eth	48	49	40	38	36	44	42	44
3	Eth	41	39	34	39	39	38	39	37
4	Eth	48	41	37	34	34	35	38	35
5	Eth	46	43	39	30	37	41	46	49
6	Eth	52	53	54	52	50	50	49	51
7	Eth	46	45	39	45	42	47	47	44
8	Eth	51	43	39	40	42	41	47	42
9	Eth	47	41	39	35	45	37	43	35
10	Eth	43	42	38	40	45	38	39	44
11	Eth	41	38	35	32	29	31	32	34
12	Eth	38	42	39	36	34	42	33	34
13	Eth	42	42	39	36	40	38	44	40
14	Eth	44	48	38	31	34	32	34	32
15	Eth	49	46	41	46	42	39	42	46
16	Eth	50	45	41	40	43	40	44	42
17	Eth	50	44	45	45	45	41	43	41
18	Eth	46	45	39	40	41	40	41	41
19	Eth	44	51	36	35	37	36	36	37
20	Eth	48	49	40	38	35	51	37	41
21	Eth	45	48	42	43	40	42	41	40
22	Eth	42	41	38	35	35	36	36	39
23	Eth	47	44	38	37	37	36	37	37
24	Eth	49	40	36	37	36	37	39	37
25	Eth	45	42	39	39	34	39	42	38
26	Eth	41	35	39	37	32	34	34	36
27	Eth	45	48	44	43	45	43	49	42
28	Eth	44	37	39	34	34	37	37	37
29	Eth	41	40	39	35	38	37	39	40
30	Eth	43	44	39	35	32	33	39	35
31	Eth	45	38	34	41	36	34	36	35
32	Eth	43	45	40	37	38	38	38	37
1	Sal	41	42	48	46	47	39	39	40
2	Sal	36	37	36	46	41	43	44	46
3	Sal	40	43	43	38	41	45	44	45
4	Sal	32	39	36	40	41	34	38	41
5	Sal	44	46	43	48	48	47	48	47
6	Sal	44	48	48	47	47	47	46	48
7	Sal	49	51	51	52	51	49	51	49
8	Sal	43	46	45	47	48	51	49	50
9	Sal	37	42	38	45	40	37	48	44
10	Sal	41	43	39	40	40	41	43	39
11	Sal	34	37	36	37	40	38	39	37
12	Sal	44	41	40	41	42	44	44	44
13	Sal	31	34	36	35	36	36	37	42
14	Sal	37	35	35	31	44	42	39	40
15	Sal	39	43	48	44	48	46	45	45
16	Sal	40	44	39	41	41	40	43	47

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 4
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	47	45	50	45	44	43	45
2	Eth	46	50	42	37	42	42	45	47
3	Eth	46	39	38	37	36	37	39	39
4	Eth	42	40	42	36	37	41	43	42
5	Eth	44	45	41	41	39	43	41	39
6	Eth	49	49	40	43	46	43	40	43
7	Eth	44	40	48	34	47	45	44	45
8	Eth	48	40	37	36	38	39	41	42
9	Eth	47	48	43	38	42	40	42	43
10	Eth	44	46	45	45	43	43	46	43
11	Eth	51	41	41	36	36	37	39	39
12	Eth	44	43	36	32	35	35	34	36
13	Eth	46	49	47	44	45	45	46	44
14	Eth	48	54	38	39	36	36	39	40
15	Eth	48	47	47	48	44	51	47	55
16	Eth	47	44	39	38	38	41	43	41
17	Eth	48	45	44	40	39	36	36	42
18	Eth	42	44	41	45	39	40	40	42
19	Eth	42	40	40	38	35	33	33	32
20	Eth	45	41	41	37	44	42	45	44
21	Eth	48	45	39	34	32	36	39	33
22	Eth	45	42	36	34	34	34	35	35
23	Eth	41	43	42	42	40	38	36	37
24	Eth	44	43	44	36	38	39	41	39
25	Eth	51	50	46	46	50	51	49	50
26	Eth	49	44	40	36	36	38	37	37
27	Eth	42	44	37	32	36	38	37	36
28	Eth	39	42	37	34	34	35	30	35
29	Eth	45	46	37	40	38	40	50	49
30	Eth	42	43	41	40	43	34	44	41
31	Eth	37	39	36	37	34	39	37	34
32	Eth	45	35	39	36	35	32	34	35
1	Sal	42	44	38	41	44	45	50	46
2	Sal	46	49	52	42	45	45	50	44
3	Sal	39	39	39	36	40	39	41	38
4	Sal	38	42	39	41	36	39	42	44
5	Sal	46	42	46	44	45	45	45	45
6	Sal	45	45	42	45	45	45	46	45
7	Sal	44	44	50	46	46	50	45	48
8	Sal	44	45	45	46	46	45	45	46
9	Sal	32	37	40	42	36	39	41	43
10	Sal	41	45	45	45	43	45	45	45
11	Sal	42	40	46	42	45	41	46	45
12	Sal	43	45	45	48	49	43	44	49
13	Sal	37	41	45	42	43	41	42	43
14	Sal	41	40	41	41	37	40	42	41
15	Sal	40	42	46	42	43	45	46	45
16	Sal	48	43	44	48	45	47	47	52

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 5

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	44	44	44	39	42	48	45
2	Eth	48	45	41	40	40	43	44	48
3	Eth	45	47	35	35	37	39	39	37
4	Eth	45	45	40	34	35	41	39	41
5	Eth	46	44	46	39	36	40	39	40
6	Eth	50	50	47	45	41	47	50	45
7	Eth	45	49	42	40	49	41	42	45
8	Eth	46	44	41	40	43	38	45	41
9	Eth	49	45	42	38	40	46	44	41
10	Eth	52	55	52	51	51	49	48	47
11	Eth	42	41	40	38	39	39	40	42
12	Eth	49	44	39	38	37	39	38	39
13	Eth	48	48	46	47	48	47	44	48
14	Eth	52	48	42	44	43	46	48	40
15	Eth	49	50	52	48	50	47	48	47
16	Eth	47	47	40	40	41	42	39	50
17	Eth	45	40	42	39	39	35	42	43
18	Eth	45	44	44	40	37	38	39	40
19	Eth	36	37	37	33	34	34	34	34
20	Eth	50	48	46	37	38	50	47	41
21	Eth	44	43	34	32	32	31	34	36
22	Eth	45	44	40	39	36	34	36	34
23	Eth	38	40	39	36	35	33	37	33
24	Eth	47	43	39	44	46	41	45	44
25	Eth	50	47	41	44	38	44	41	41
26	Eth	44	44	41	38	38	39	37	44
27	Eth	44	45	40	39	44	35	43	42
28	Eth	40	35	34	35	34	36	37	39
29	Eth	46	39	39	38	38	39	38	41
30	Eth	43	42	40	38	39	35	36	37
31	Eth	40	39	40	36	35	36	32	31
32	Eth	41	40	38	36	31	33	35	35
1	Sal	37	43	41	45	42	40	40	41
2	Sal	42	43	45	50	49	48	47	55
3	Sal	34	34	41	39	38	47	42	45
4	Sal	33	40	41	44	41	36	45	34
5	Sal	41	41	44	42	44	45	45	43
6	Sal	41	45	41	44	41	43	45	45
7	Sal	46	47	48	53	49	45	47	49
8	Sal	41	46	40	46	45	48	44	46
9	Sal	37	37	49	42	35	41	45	41
10	Sal	40	41	39	44	44	45	45	42
11	Sal	39	39	40	45	41	45	44	43
12	Sal	45	46	46	46	47	48	54	48
13	Sal	41	42	42	44	44	41	43	43
14	Sal	41	49	43	41	43	36	40	44
15	Sal	45	42	43	45	47	46	44	43
16	Sal	49	47	53	52	50	49	49	50

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 6

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	53	54	45	42	45	41	48	46
2	Eth	47	51	46	49	43	48	49	46
3	Eth	40	37	37	36	34	40	35	37
4	Eth	49	46	48	43	43	41	49	51
5	Eth	46	44	39	39	37	37	42	41
6	Eth	48	49	45	43	47	50	49	47
7	Eth	47	48	43	50	49	44	45	44
8	Eth	51	48	48	45	45	44	44	51
9	Eth	51	42	40	39	41	42	40	41
10	Eth	50	45	44	42	44	47	51	43
11	Eth	44	40	40	37	39	40	37	40
12	Eth	43	49	37	35	37	38	40	47
13	Eth	42	42	40	39	44	45	48	51
14	Eth	44	49	41	40	39	47	43	42
15	Eth	44	49	49	45	48	47	49	51
16	Eth	52	45	38	39	43	42	42	40
17	Eth	44	43	42	46	39	40	40	45
18	Eth	48	48	45	43	46	43	46	50
19	Eth	48	44	43	41	39	35	39	39
20	Eth	46	45	42	34	39	41	38	44
21	Eth	47	43	39	32	32	34	40	38
22	Eth	44	44	41	37	37	36	43	45
23	Eth	42	44	44	39	40	40	43	44
24	Eth	45	40	39	34	37	45	43	39
25	Eth	47	46	42	40	49	50	44	46
26	Eth	45	47	43	42	41	39	40	41
27	Eth	40	45	37	39	34	37	40	40
28	Eth	43	39	39	38	42	38	41	43
29	Eth	47	45	40	45	43	41	39	39
30	Eth	42	46	39	37	38	42	42	40
31	Eth	36	37	39	34	38	36	36	37
32	Eth	41	40	36	32	36	40	37	39
1	Sal	45	41	55	46	44	41	46	50
2	Sal	46	45	50	43	48	43	46	45
3	Sal	41	41	40	41	40	45	45	48
4	Sal	43	45	43	45	46	43	50	45
5	Sal	46	42	41	46	46	43	46	47
6	Sal	44	47	49	48	52	45	47	50
7	Sal	46	46	49	56	49	51	46	47
8	Sal	44	43	46	43	46	47	48	45
9	Sal	40	44	43	44	51	51	53	56
10	Sal	39	41	43	45	44	42	46	46
11	Sal	43	44	45	44	44	49	47	49
12	Sal	46	48	46	50	51	52	51	49
13	Sal	45	45	44	44	44	44	44	44
14	Sal	45	42	44	44	44	45	46	44
15	Sal	43	42	52	49	48	53	50	46
16	Sal	43	49	53	48	44	45	45	45

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 7

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	50	44	43	46	44	49	48
2	Eth	48	49	41	43	41	40	46	44
3	Eth	42	39	37	39	38	40	38	44
4	Eth	47	44	45	38	45	41	40	39
5	Eth	49	49	44	42	44	44	44	46
6	Eth	52	53	49	51	56	51	50	54
7	Eth	46	41	44	49	45	40	42	45
8	Eth	47	48	43	43	46	46	43	45
9	Eth	45	42	42	43	45	48	45	42
10	Eth	51	46	50	45	44	47	45	44
11	Eth	55	45	45	43	42	40	42	43
12	Eth	45	45	41	43	45	42	42	40
13	Eth	44	44	48	47	49	47	43	44
14	Eth	54	52	50	45	44	49	43	47
15	Eth	45	47	55	47	49	47	41	45
16	Eth	47	45	42	36	45	54	43	45
17	Eth	49	44	46	44	45	42	45	45
18	Eth	48	50	45	36	41	45	41	44
19	Eth	43	43	37	37	41	41	42	43
20	Eth	52	46	42	42	45	48	47	51
21	Eth	42	49	50	43	50	45	48	45
22	Eth	41	43	37	37	36	38	40	39
23	Eth	45	44	40	42	37	39	42	45
24	Eth	46	47	35	37	37	38	37	40
25	Eth	44	47	42	41	39	41	45	45
26	Eth	48	46	46	37	44	42	46	40
27	Eth	46	50	46	46	42	47	46	48
28	Eth	44	42	39	40	39	39	40	44
29	Eth	44	50	47	45	48	49	45	43
30	Eth	44	43	38	33	40	39	40	40
31	Eth	45	42	36	34	45	36	35	39
32	Eth	45	41	36	34	34	35	35	35
1	Sal	46	44	39	40	48	44	46	46
2	Sal	45	47	45	43	46	45	46	55
3	Sal	41	39	40	46	45	45	43	46
4	Sal	43	49	45	45	41	45	54	45
5	Sal	37	41	45	45	47	46	50	42
6	Sal	48	45	45	46	46	48	50	44
7	Sal	48	51	51	52	53	52	56	50
8	Sal	45	47	51	49	49	49	50	50
9	Sal	32	47	39	41	39	46	39	45
10	Sal	40	39	43	44	44	45	46	45
11	Sal	41	42	39	41	45	41	44	41
12	Sal	42	38	42	42	48	45	42	48
13	Sal	38	43	44	43	44	43	43	45
14	Sal	47	46	44	47	42	44	44	44
15	Sal	39	41	40	40	43	46	54	42
16	Sal	39	47	48	41	45	45	49	44

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 8

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	48	46	43	44	48	49	48
2	Eth	49	55	42	42	44	46	48	57
3	Eth	42	46	44	39	38	41	40	44
4	Eth	50	47	43	44	41	44	42	43
5	Eth	46	49	43	40	39	44	41	43
6	Eth	48	46	41	48	45	49	52	50
7	Eth	44	41	44	46	45	50	48	47
8	Eth	44	55	44	43	45	45	47	48
9	Eth	51	47	45	49	45	45	44	45
10	Eth	45	44	42	43	42	37	46	45
11	Eth	39	44	41	40	40	40	41	45
12	Eth	40	46	44	35	36	38	39	41
13	Eth	43	42	43	46	47	45	48	40
14	Eth	47	42	41	40	41	49	43	46
15	Eth	46	48	41	46	49	43	48	49
16	Eth	50	50	43	40	38	37	49	45
17	Eth	47	45	41	38	40	39	43	45
18	Eth	48	44	41	42	41	47	45	50
19	Eth	40	46	41	35	39	43	43	42
20	Eth	48	45	41	38	37	41	43	41
21	Eth	44	52	46	50	43	43	44	45
22	Eth	47	45	41	44	38	42	40	41
23	Eth	44	45	41	39	37	39	38	39
24	Eth	42	40	46	45	36	42	35	39
25	Eth	48	50	47	39	39	41	40	41
26	Eth	47	46	42	39	39	37	40	44
27	Eth	44	45	45	43	40	44	41	43
28	Eth	46	42	42	43	41	40	37	38
29	Eth	49	46	39	41	42	40	40	43
30	Eth	45	43	48	44	41	45	44	42
31	Eth	39	40	34	38	39	34	40	37
32	Eth	46	41	36	35	34	34	36	41
1	Sal	49	49	51	51	45	48	49	48
2	Sal	39	42	41	46	45	41	45	47
3	Sal	42	45	44	50	45	41	42	45
4	Sal	42	45	41	45	41	42	42	41
5	Sal	45	46	50	45	45	50	50	49
6	Sal	45	49	49	49	48	50	50	49
7	Sal	49	49	47	51	51	51	51	51
8	Sal	44	42	42	47	47	47	46	51
9	Sal	49	49	45	48	49	45	45	49
10	Sal	44	42	44	40	42	43	41	42
11	Sal	40	40	41	42	45	38	42	40
12	Sal	42	44	44	46	50	46	46	46
13	Sal	38	42	43	45	45	45	45	45
14	Sal	45	44	45	47	42	45	43	44
15	Sal	45	45	44	45	44	48	51	45
16	Sal	39	47	47	45	50	47	49	48

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 9

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	48	44	46	44	40	45	46
2	Eth	47	55	45	43	45	41	58	50
3	Eth	40	47	40	39	38	41	41	42
4	Eth	44	42	44	40	44	37	42	45
5	Eth	42	42	35	37	38	40	39	38
6	Eth	47	48	50	42	39	49	50	48
7	Eth	46	48	40	39	45	47	49	46
8	Eth	50	44	41	35	42	41	39	42
9	Eth	51	48	42	41	42	44	44	46
10	Eth	49	49	45	42	50	47	52	46
11	Eth	45	46	39	40	41	43	42	38
12	Eth	41	44	36	36	36	40	41	44
13	Eth	45	46	46	46	45	49	45	44
14	Eth	52	49	45	43	44	48	49	52
15	Eth	48	51	45	42	44	43	44	46
16	Eth	45	51	50	46	46	48	49	42
17	Eth	50	45	44	42	42	41	43	46
18	Eth	47	48	44	43	43	44	45	44
19	Eth	44	44	41	38	39	39	38	40
20	Eth	46	49	49	38	39	39	50	42
21	Eth	50	48	43	41	41	43	43	42
22	Eth	48	47	42	43	42	40	42	42
23	Eth	47	43	42	47	48	46	44	42
24	Eth	49	51	45	52	49	53	50	47
25	Eth	48	45	48	46	48	44	46	47
26	Eth	46	45	44	42	41	41	44	41
27	Eth	47	48	43	44	41	48	39	39
28	Eth	44	47	41	40	39	43	39	39
29	Eth	45	44	42	43	44	46	44	42
30	Eth	43	46	47	48	46	46	45	41
31	Eth	43	41	39	37	36	41	44	37
32	Eth	46	41	37	38	39	41	41	38
1	Sal	46	47	51	47	49	49	48	51
2	Sal	49	49	48	50	55	49	46	49
3	Sal	41	46	46	44	44	45	45	46
4	Sal	41	46	41	45	49	45	44	46
5	Sal	46	46	46	46	45	46	45	49
6	Sal	46	47	47	50	46	51	49	51
7	Sal	51	52	56	51	51	55	51	49
8	Sal	46	45	48	50	51	51	51	52
9	Sal	47	49	50	51	52	55	49	53
10	Sal	44	44	44	46	46	49	44	45
11	Sal	40	40	41	42	46	40	41	40
12	Sal	41	43	48	49	48	52	49	44
13	Sal	37	41	42	46	45	47	46	45
14	Sal	43	42	46	47	42	45	42	44
15	Sal	51	48	48	50	45	49	48	47
16	Sal	39	47	46	49	55	49	49	51

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
 Tolerance Development, Day 10
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	42	46	36	34	40	43	42	42
2	Eth	48	49	43	42	47	43	44	48
3	Eth	40	43	39	37	34	39	40	41
4	Eth	39	45	37	37	42	44	40	45
5	Eth	42	42	39	35	34	36	36	41
6	Eth	48	48	52	39	45	43	43	49
7	Eth	47	49	42	42	42	48	40	43
8	Eth	50	50	41	37	38	42	43	42
9	Eth	48	46	46	45	42	40	44	41
10	Eth	45	55	45	45	47	43	42	45
11	Eth	49	45	43	42	43	45	41	43
12	Eth	43	42	38	37	45	47	39	40
13	Eth	42	45	47	44	51	49	47	45
14	Eth	47	56	50	52	49	48	49	47
15	Eth	52	48	50	49	49	47	46	48
16	Eth	48	42	43	40	41	42	40	46
17	Eth	45	42	45	42	43	41	44	39
18	Eth	49	46	47	43	45	43	43	43
19	Eth	41	43	39	36	35	38	37	36
20	Eth	46	41	44	37	38	45	40	39
21	Eth	48	44	39	39	39	39	41	38
22	Eth	43	41	42	44	39	41	42	39
23	Eth	45	45	41	40	38	44	46	38
24	Eth	44	41	44	40	43	41	38	42
25	Eth	51	49	37	42	43	45	44	42
26	Eth	45	46	44	41	39	44	39	37
27	Eth	44	44	46	41	45	44	46	43
28	Eth	47	47	48	45	45	45	44	45
29	Eth	42	46	36	39	40	40	41	39
30	Eth	39	44	39	47	43	40	43	41
31	Eth	42	40	40	34	36	37	36	34
32	Eth	44	41	35	36	39	37	37	37
1	Sal	41	45	47	44	49	50	51	50
2	Sal	44	43	45	45	43	45	45	46
3	Sal	45	44	46	45	45	45	48	45
4	Sal	40	46	45	45	45	46	45	46
5	Sal	41	46	51	41	51	46	45	43
6	Sal	41	41	45	46	45	46	50	44
7	Sal	48	51	50	46	51	46	50	50
8	Sal	43	49	46	46	49	41	46	49
9	Sal	54	50	57	51	49	52	51	51
10	Sal	41	40	41	41	44	44	48	45
11	Sal	40	49	42	40	43	42	43	41
12	Sal	40	42	49	45	48	48	49	48
13	Sal	40	46	44	44	45	44	44	44
14	Sal	45	48	46	49	45	45	50	51
15	Sal	52	46	47	45	47	50	51	51
16	Sal	49	49	50	52	53	48	48	56

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 11

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	51	46	44	49	43	46	48
2	Eth	49	51	40	39	47	52	46	43
3	Eth	46	46	44	44	40	47	42	46
4	Eth	44	47	39	37	46	45	45	40
5	Eth	44	47	44	39	39	38	42	45
6	Eth	51	51	55	49	50	48	50	48
7	Eth	46	43	46	51	48	47	50	48
8	Eth	51	50	53	53	50	49	46	47
9	Eth	48	50	42	41	41	44	43	40
10	Eth	52	50	46	44	54	50	50	50
11	Eth	44	45	50	40	42	46	42	44
12	Eth	49	49	44	44	40	43	45	41
13	Eth	45	45	49	46	45	48	45	43
14	Eth	48	44	41	35	37	39	38	42
15	Eth	47	49	48	44	49	44	45	43
16	Eth	50	50	40	40	39	38	42	41
17	Eth	46	44	37	41	37	42	44	46
18	Eth	49	50	48	46	41	45	40	49
19	Eth	42	46	41	37	41	41	43	41
20	Eth	48	46	50	48	44	42	51	50
21	Eth	47	44	40	37	39	42	42	39
22	Eth	40	42	39	38	40	42	47	43
23	Eth	45	46	53	46	45	42	43	47
24	Eth	47	50	45	46	45	48	52	45
25	Eth	53	47	44	43	44	45	49	43
26	Eth	42	41	39	39	39	39	41	43
27	Eth	47	40	39	36	38	40	44	42
28	Eth	45	46	42	41	41	41	42	44
29	Eth	46	49	44	44	42	41	39	41
30	Eth	40	42	44	42	47	40	42	43
31	Eth	41	41	41	38	40	42	41	41
32	Eth	42	41	44	40	35	35	40	36
1	Sal	46	49	44	50	46	49	54	48
2	Sal	44	49	48	46	50	47	51	46
3	Sal	41	44	45	45	45	50	49	46
4	Sal	42	45	45	46	40	46	39	50
5	Sal	39	41	46	46	47	47	46	48
6	Sal	42	45	45	46	46	46	50	51
7	Sal	46	51	50	49	47	52	56	46
8	Sal	42	46	46	50	46	46	46	51
9	Sal	36	39	39	45	41	51	51	52
10	Sal	43	44	44	40	44	44	45	45
11	Sal	44	44	44	42	49	46	44	41
12	Sal	44	49	45	46	44	45	46	50
13	Sal	39	45	44	42	47	49	44	45
14	Sal	45	46	45	47	46	46	46	45
15	Sal	45	45	46	45	53	45	52	49
16	Sal	49	45	48	46	50	49	45	50

Chapter 4, Experiment 3a – Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 12

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	46	45	41	44	43	44	42
2	Eth	51	54	55	42	41	40	45	45
3	Eth	44	44	43	39	39	40	41	40
4	Eth	42	42	40	39	40	40	43	43
5	Eth	44	44	44	40	44	42	41	42
6	Eth	49	48	46	52	56	50	55	60
7	Eth	50	54	47	40	39	39	38	36
8	Eth	45	46	48	43	57	47	47	48
9	Eth	46	48	42	38	42	44	41	43
10	Eth	47	50	48	50	46	49	46	52
11	Eth	38	44	43	42	36	42	43	42
12	Eth	45	47	40	39	39	38	35	40
13	Eth	43	46	46	43	45	41	44	42
14	Eth	48	43	50	40	38	40	43	41
15	Eth	46	46	40	39	43	39	40	43
16	Eth	47	46	39	39	40	43	39	40
17	Eth	49	46	47	51	47	43	48	40
18	Eth	52	52	47	52	51	50	54	52
19	Eth	44	52	42	42	46	44	51	46
20	Eth	48	51	45	43	43	43	46	46
21	Eth	50	49	40	39	41	39	44	45
22	Eth	47	49	49	44	43	41	44	46
23	Eth	44	47	47	45	44	40	52	45
24	Eth	48	51	50	57	47	46	54	51
25	Eth	52	49	46	48	47	50	52	49
26	Eth	48	44	41	40	41	43	44	46
27	Eth	52	50	53	55	52	55	52	52
28	Eth	44	46	38	40	41	40	49	42
29	Eth	48	55	41	44	46	46	49	50
30	Eth	44	42	35	40	42	44	44	45
31	Eth	41	40	44	34	44	38	51	39
32	Eth	45	41	35	36	35	41	42	43
1	Sal	50	54	51	50	50	52	51	51
2	Sal	44	46	46	48	51	51	51	45
3	Sal	49	44	44	44	44	49	44	46
4	Sal	44	43	48	44	50	51	46	45
5	Sal	49	49	51	50	46	51	51	52
6	Sal	46	46	46	54	51	51	51	47
7	Sal	51	51	57	49	56	62	50	51
8	Sal	44	46	46	49	46	46	46	45
9	Sal	48	49	46	50	46	49	51	51
10	Sal	43	41	44	41	46	42	45	41
11	Sal	39	44	44	44	42	46	49	46
12	Sal	44	42	46	46	46	54	46	49
13	Sal	39	45	43	41	44	41	42	41
14	Sal	44	44	41	44	43	41	47	44
15	Sal	51	43	45	49	46	47	54	51
16	Sal	42	48	48	49	47	48	46	51

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
 Tolerance Development, Day 13
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	48	43	41	44	42	48	44
2	Eth	50	52	44	45	45	44	50	45
3	Eth	43	44	45	48	49	48	48	48
4	Eth	43	41	47	48	47	48	43	39
5	Eth	48	48	44	44	46	45	50	48
6	Eth	46	45	44	42	46	40	49	41
7	Eth	41	47	41	40	41	38	44	39
8	Eth	45	50	39	41	34	39	51	43
9	Eth	44	44	49	45	46	49	41	44
10	Eth	49	45	49	46	48	47	47	45
11	Eth	44	41	35	38	40	41	44	41
12	Eth	45	44	38	36	35	35	43	44
13	Eth	43	40	44	39	41	41	42	42
14	Eth	47	47	41	35	34	35	37	42
15	Eth	45	47	45	44	43	43	41	47
16	Eth	50	44	41	38	40	35	41	36
17	Eth	51	46	44	43	43	45	46	48
18	Eth	50	54	54	54	53	50	48	56
19	Eth	45	48	48	39	47	41	44	43
20	Eth	49	49	43	44	47	45	46	42
21	Eth	50	56	54	50	52	54	53	52
22	Eth	47	44	39	38	40	40	41	37
23	Eth	50	58	48	52	48	47	46	49
24	Eth	43	46	47	41	35	37	38	41
25	Eth	52	49	41	40	41	42	42	45
26	Eth	45	47	44	39	39	40	39	48
27	Eth	48	48	48	52	53	45	50	50
28	Eth	45	48	39	41	37	36	35	40
29	Eth	50	44	46	44	44	43	44	46
30	Eth	42	41	36	40	38	40	39	43
31	Eth	40	39	45	34	41	36	39	40
32	Eth	45	44	47	40	41	37	40	40
1	Sal	41	45	46	46	51	51	46	46
2	Sal	43	45	51	50	42	50	50	51
3	Sal	49	50	50	55	50	50	48	48
4	Sal	40	40	44	40	42	54	46	49
5	Sal	43	49	46	50	45	50	51	50
6	Sal	45	45	44	50	46	45	49	47
7	Sal	54	51	55	52	61	51	51	51
8	Sal	46	50	46	46	45	49	46	47
9	Sal	36	36	34	36	40	40	41	47
10	Sal	42	42	42	41	41	42	42	43
11	Sal	35	36	38	42	39	44	42	40
12	Sal	42	45	45	47	46	49	46	48
13	Sal	37	41	42	41	44	45	45	46
14	Sal	37	42	45	45	40	36	44	40
15	Sal	39	40	42	49	50	50	44	46
16	Sal	37	41	45	48	52	50	48	48

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
 Tolerance Development, Day 14
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	47	44	44	44	43	45	41
2	Eth	47	51	45	40	44	38	44	42
3	Eth	48	53	44	41	41	44	46	48
4	Eth	41	39	34	36	35	36	43	35
5	Eth	42	46	42	39	41	41	40	41
6	Eth	48	46	43	47	42	44	44	50
7	Eth	45	52	40	49	50	43	43	44
8	Eth	52	40	39	42	40	42	47	39
9	Eth	48	43	41	37	40	39	40	37
10	Eth	45	39	41	40	41	42	41	41
11	Eth	45	48	44	41	42	41	41	43
12	Eth	41	42	42	37	36	45	40	41
13	Eth	41	51	40	42	40	43	43	41
14	Eth	44	49	39	40	43	39	48	42
15	Eth	48	47	48	42	40	43	44	47
16	Eth	49	46	41	40	41	43	44	43
17	Eth	49	48	48	47	45	47	49	48
18	Eth	52	43	42	44	43	41	43	43
19	Eth	44	51	47	49	42	46	49	44
20	Eth	50	57	49	47	46	49	51	51
21	Eth	53	56	53	53	56	48	56	54
22	Eth	48	45	46	43	46	44	48	49
23	Eth	45	46	46	46	44	42	44	46
24	Eth	52	56	48	48	49	52	58	52
25	Eth	52	51	42	49	50	46	48	45
26	Eth	43	47	46	45	43	45	45	50
27	Eth	45	51	50	51	48	50	51	50
28	Eth	56	55	49	49	46	46	51	45
29	Eth	43	49	41	43	46	42	46	46
30	Eth	44	42	49	52	51	46	47	52
31	Eth	34	39	40	36	34	44	42	32
32	Eth	41	39	36	34	34	34	33	34
1	Sal	47	51	46	49	49	52	49	49
2	Sal	48	50	45	47	47	49	55	48
3	Sal	42	48	41	42	43	43	45	42
4	Sal	37	45	44	49	45	49	49	45
5	Sal	47	45	44	44	48	46	49	51
6	Sal	44	40	45	44	44	46	49	46
7	Sal	50	51	55	56	61	51	56	56
8	Sal	45	46	46	51	47	49	46	51
9	Sal	46	45	42	45	39	44	46	45
10	Sal	38	39	42	39	38	37	36	37
11	Sal	48	44	41	48	42	41	43	41
12	Sal	42	44	42	46	42	45	41	46
13	Sal	41	42	41	40	41	45	43	45
14	Sal	39	40	42	36	42	41	42	37
15	Sal	36	42	46	44	45	49	43	51
16	Sal	36	42	52	47	50	43	45	48

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 15

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	48	45	46	47	46	48	48
2	Eth	46	46	44	44	40	49	48	43
3	Eth	49	44	44	44	45	49	45	45
4	Eth	42	43	41	40	42	39	45	37
5	Eth	48	49	46	48	40	41	45	41
6	Eth	49	46	49	51	56	51	45	53
7	Eth	56	64	51	46	47	48	48	49
8	Eth	46	45	54	44	48	44	40	44
9	Eth	45	43	36	36	41	38	39	37
10	Eth	49	46	44	43	43	44	43	45
11	Eth	47	44	44	41	44	40	41	44
12	Eth	45	46	40	38	39	38	40	40
13	Eth	44	46	43	41	45	44	44	46
14	Eth	48	50	44	36	42	40	40	39
15	Eth	45	46	44	49	45	47	44	50
16	Eth	52	55	47	48	44	44	43	45
17	Eth	51	48	50	45	46	42	46	47
18	Eth	47	45	42	40	36	37	37	40
19	Eth	45	50	45	43	43	45	47	48
20	Eth	49	50	44	47	45	50	50	51
21	Eth	52	54	46	44	44	43	43	40
22	Eth	48	46	45	42	42	45	45	43
23	Eth	49	46	47	47	45	48	47	47
24	Eth	47	50	50	45	48	46	51	49
25	Eth	49	56	48	44	46	50	48	51
26	Eth	49	46	43	42	44	42	47	45
27	Eth	43	47	44	41	44	50	43	45
28	Eth	50	48	48	43	43	45	47	48
29	Eth	48	50	47	46	45	45	42	49
30	Eth	49	51	48	50	47	46	47	48
31	Eth	42	50	41	40	42	36	41	48
32	Eth	45	40	39	35	36	40	40	41
1	Sal	40	47	46	51	46	49	48	46
2	Sal	46	45	48	46	46	45	50	45
3	Sal	40	44	41	43	45	46	45	48
4	Sal	51	50	49	45	45	46	48	49
5	Sal	48	45	44	45	42	42	45	42
6	Sal	45	42	47	45	43	41	45	47
7	Sal	47	51	54	51	55	49	51	56
8	Sal	44	49	48	48	50	50	46	48
9	Sal	47	50	50	48	48	54	48	51
10	Sal	41	39	41	41	41	42	44	41
11	Sal	46	45	40	46	40	44	46	45
12	Sal	43	46	45	45	46	46	46	46
13	Sal	41	42	42	45	45	47	46	45
14	Sal	44	46	46	50	44	45	49	44
15	Sal	52	48	51	43	50	45	52	44
16	Sal	45	50	52	51	48	46	49	53

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 16

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	48	49	43	45	41	42	43
2	Eth	50	51	45	45	42	50	53	49
3	Eth	44	47	39	40	39	46	44	46
4	Eth	44	46	46	43	42	44	43	46
5	Eth	47	48	45	40	42	45	43	46
6	Eth	51	48	46	45	50	44	48	49
7	Eth	46	46	47	44	45	48	44	46
8	Eth	50	46	45	44	44	45	44	45
9	Eth	49	53	50	49	45	46	49	44
10	Eth	47	55	50	55	47	50	51	44
11	Eth	41	49	50	41	40	45	45	45
12	Eth	42	51	43	40	40	41	44	44
13	Eth	45	45	44	47	41	40	48	47
14	Eth	47	46	40	39	40	40	45	44
15	Eth	47	47	47	48	45	46	47	44
16	Eth	48	40	41	37	41	40	40	44
17	Eth	45	46	40	39	41	40	41	44
18	Eth	50	50	47	45	42	44	43	44
19	Eth	52	52	50	48	49	46	47	45
20	Eth	46	50	50	48	46	45	45	46
21	Eth	47	49	47	42	41	43	45	42
22	Eth	43	44	41	40	40	41	40	38
23	Eth	44	47	48	44	47	49	48	48
24	Eth	50	51	50	46	47	49	51	50
25	Eth	51	51	51	50	52	49	51	50
26	Eth	42	45	41	41	43	41	40	43
27	Eth	49	43	43	42	44	42	40	41
28	Eth	43	42	40	42	44	41	44	42
29	Eth	44	46	44	49	47	48	45	49
30	Eth	40	44	42	41	43	43	44	43
31	Eth	40	40	36	39	34	34	34	44
32	Eth	43	41	36	35	35	36	36	41
1	Sal	49	51	50	51	55	51	51	56
2	Sal	42	54	45	50	48	48	49	50
3	Sal	41	46	44	43	45	46	43	42
4	Sal	35	36	44	45	41	44	43	46
5	Sal	34	39	39	43	37	39	41	44
6	Sal	42	44	46	42	41	41	45	43
7	Sal	51	56	51	54	51	54	56	49
8	Sal	45	41	44	51	45	51	48	46
9	Sal	39	39	39	46	44	44	45	44
10	Sal	42	48	45	44	42	44	43	42
11	Sal	38	41	46	46	46	42	45	46
12	Sal	43	44	47	44	45	46	48	51
13	Sal	41	44	46	44	44	46	45	45
14	Sal	46	46	46	44	45	44	47	45
15	Sal	49	54	50	51	49	53	52	53
16	Sal	44	49	51	48	49	49	50	51

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 17

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	45	44	46	48	45	49	47
2	Eth	48	47	41	45	44	41	47	43
3	Eth	45	46	39	39	40	44	44	45
4	Eth	44	45	41	37	37	39	36	44
5	Eth	44	48	42	39	41	41	44	44
6	Eth	52	52	52	51	50	50	56	52
7	Eth	44	45	43	39	40	40	38	36
8	Eth	41	43	39	37	40	39	39	38
9	Eth	47	44	41	40	42	39	42	44
10	Eth	45	45	42	44	44	43	43	47
11	Eth	41	49	40	41	38	39	40	45
12	Eth	44	41	40	40	40	39	39	42
13	Eth	40	45	39	40	43	44	48	43
14	Eth	48	43	37	36	36	37	40	40
15	Eth	50	47	52	47	46	48	50	49
16	Eth	48	44	41	40	44	46	46	44
17	Eth	42	44	39	43	39	38	41	39
18	Eth	47	47	42	40	42	38	44	42
19	Eth	42	45	40	42	38	43	44	44
20	Eth	49	46	45	44	43	43	46	50
21	Eth	52	50	41	40	40	41	45	45
22	Eth	38	41	38	40	40	37	39	40
23	Eth	45	49	44	41	45	46	46	45
24	Eth	45	44	43	44	47	45	48	49
25	Eth	49	46	44	45	40	43	45	46
26	Eth	45	45	42	38	42	41	44	40
27	Eth	46	41	41	41	42	41	40	43
28	Eth	45	49	43	40	40	44	44	39
29	Eth	46	49	46	45	44	47	42	44
30	Eth	41	50	41	39	39	37	40	41
31	Eth	40	37	37	34	36	41	45	42
32	Eth	41	37	40	36	42	41	37	39
1	Sal	45	46	45	46	47	45	46	45
2	Sal	49	51	48	49	51	50	51	46
3	Sal	37	40	39	41	40	39	40	38
4	Sal	41	45	41	39	41	47	41	41
5	Sal	42	44	44	41	44	46	46	42
6	Sal	41	43	42	42	42	41	41	41
7	Sal	45	49	51	50	52	51	47	51
8	Sal	40	41	44	45	41	46	46	49
9	Sal	44	50	53	51	55	50	56	55
10	Sal	40	42	45	46	46	46	46	44
11	Sal	38	42	44	45	44	41	45	46
12	Sal	41	41	43	45	48	49	50	46
13	Sal	41	42	42	47	45	49	46	45
14	Sal	41	41	44	43	44	46	46	47
15	Sal	41	46	45	47	46	45	54	49
16	Sal	45	51	46	46	54	49	48	51

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 18

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	49	39	37	40	37	45	39
2	Eth	44	45	38	36	39	39	41	42
3	Eth	48	49	40	38	44	45	45	46
4	Eth	41	47	41	39	39	40	43	42
5	Eth	45	46	41	39	39	39	45	43
6	Eth	50	44	41	41	42	42	49	52
7	Eth	45	48	42	41	43	44	45	41
8	Eth	47	45	44	45	45	43	45	43
9	Eth	49	45	41	49	45	42	45	47
10	Eth	45	45	40	45	49	49	50	51
11	Eth	44	46	48	47	45	46	43	45
12	Eth	44	48	42	41	40	40	43	41
13	Eth	46	47	45	41	41	44	45	41
14	Eth	48	54	43	42	40	46	43	42
15	Eth	44	42	45	39	40	42	45	43
16	Eth	48	45	46	44	44	45	44	50
17	Eth	45	46	42	42	43	39	48	49
18	Eth	44	48	41	39	45	44	42	41
19	Eth	46	51	49	50	49	50	47	46
20	Eth	48	50	49	45	46	49	50	46
21	Eth	45	43	38	40	40	41	40	42
22	Eth	45	41	37	37	38	40	37	37
23	Eth	45	43	41	42	44	46	44	45
24	Eth	50	45	45	46	44	49	49	50
25	Eth	49	41	41	41	49	41	49	46
26	Eth	41	44	40	43	42	41	45	41
27	Eth	44	40	38	37	37	35	39	39
28	Eth	46	45	41	40	44	44	48	39
29	Eth	43	45	42	48	46	48	45	47
30	Eth	39	41	39	41	42	46	45	46
31	Eth	42	40	38	36	34	35	40	36
32	Eth	40	40	43	41	45	40	40	45
1	Sal	39	45	46	43	49	46	45	46
2	Sal	46	45	44	46	46	46	45	50
3	Sal	39	44	41	41	39	39	40	39
4	Sal	40	44	41	45	43	45	46	39
5	Sal	46	45	45	47	44	45	48	46
6	Sal	43	41	46	41	41	45	44	45
7	Sal	49	45	55	46	56	52	46	51
8	Sal	46	49	46	49	47	49	48	45
9	Sal	47	54	53	54	51	53	55	51
10	Sal	44	49	44	44	44	45	46	46
11	Sal	41	43	42	46	45	44	46	48
12	Sal	41	51	46	48	46	52	49	47
13	Sal	46	46	46	47	47	50	47	49
14	Sal	49	46	42	44	41	46	44	44
15	Sal	51	48	52	49	50	52	56	48
16	Sal	48	59	54	53	50	49	54	50

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 19

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	44	46	45	44	45	45	49
2	Eth	49	47	44	41	41	42	41	43
3	Eth	45	49	45	43	39	44	42	41
4	Eth	43	45	46	45	45	50	44	45
5	Eth	45	45	36	36	39	37	40	42
6	Eth	49	45	41	47	42	48	46	44
7	Eth	41	46	45	47	40	44	42	39
8	Eth	45	46	47	49	44	41	42	45
9	Eth	49	39	40	38	39	37	41	41
10	Eth	44	43	49	46	50	44	45	46
11	Eth	42	42	41	37	40	45	37	42
12	Eth	42	43	43	38	37	37	41	40
13	Eth	45	42	43	47	43	42	42	43
14	Eth	46	51	42	40	41	46	43	43
15	Eth	49	50	49	50	49	49	49	48
16	Eth	46	43	42	40	39	40	39	40
17	Eth	44	46	39	44	40	39	39	43
18	Eth	42	44	42	41	39	41	44	39
19	Eth	49	49	46	45	44	45	46	44
20	Eth	45	47	49	48	46	46	48	45
21	Eth	46	49	43	38	40	46	42	41
22	Eth	45	46	45	42	44	48	46	44
23	Eth	42	48	44	41	41	41	46	44
24	Eth	45	49	46	44	46	46	44	46
25	Eth	49	49	42	41	42	40	44	44
26	Eth	45	44	45	46	46	45	46	48
27	Eth	46	44	37	39	39	36	41	44
28	Eth	50	44	45	45	44	45	46	42
29	Eth	49	44	49	44	48	41	51	43
30	Eth	44	49	50	46	48	48	44	44
31	Eth	43	39	35	36	33	33	44	36
32	Eth	40	40	36	40	33	34	37	40
1	Sal	51	51	51	51	49	50	50	51
2	Sal	46	48	49	46	45	49	47	46
3	Sal	42	46	43	45	44	43	45	46
4	Sal	40	40	46	44	44	44	46	43
5	Sal	47	51	47	46	49	54	49	44
6	Sal	44	42	40	47	47	47	44	45
7	Sal	45	51	55	56	54	51	54	51
8	Sal	45	46	47	49	46	46	52	48
9	Sal	46	52	52	52	43	53	42	56
10	Sal	41	45	49	49	45	47	51	46
11	Sal	45	44	41	43	42	43	44	45
12	Sal	46	46	48	48	49	51	56	50
13	Sal	41	42	46	46	42	45	50	47
14	Sal	42	47	47	47	48	45	49	46
15	Sal	55	51	51	51	56	55	53	51
16	Sal	47	46	50	50	49	50	49	50

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 20

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	47	45	48	46	45	45	44
2	Eth	54	52	50	47	46	51	55	50
3	Eth	46	46	45	46	42	44	48	46
4	Eth	44	44	47	43	44	48	44	44
5	Eth	44	45	45	40	45	44	42	45
6	Eth	48	49	52	50	56	53	56	51
7	Eth	46	47	47	45	52	47	50	48
8	Eth	51	52	48	44	45	46	45	43
9	Eth	47	44	42	45	43	42	46	45
10	Eth	47	44	50	44	45	46	45	45
11	Eth	43	44	46	45	43	47	46	46
12	Eth	44	48	40	40	43	43	47	42
13	Eth	44	48	42	44	45	46	47	43
14	Eth	46	48	44	40	45	44	45	48
15	Eth	49	46	47	45	43	44	47	46
16	Eth	47	44	40	42	42	42	42	41
17	Eth	47	48	44	48	46	45	45	45
18	Eth	52	50	46	47	49	46	45	44
19	Eth	49	52	46	48	47	51	47	48
20	Eth	45	51	49	44	45	50	47	48
21	Eth	54	50	49	42	42	45	47	47
22	Eth	44	49	45	46	47	46	47	47
23	Eth	44	43	44	50	46	45	45	46
24	Eth	46	51	48	46	49	49	49	49
25	Eth	47	47	45	45	50	50	50	51
26	Eth	46	47	48	47	43	48	49	48
27	Eth	48	45	38	45	51	45	50	47
28	Eth	45	49	47	45	44	48	47	46
29	Eth	54	56	51	52	49	52	51	52
30	Eth	46	47	49	45	44	44	43	48
31	Eth	47	43	44	39	42	43	41	40
32	Eth	39	43	39	36	39	36	41	38
1	Sal	46	49	44	44	46	46	49	44
2	Sal	51	53	52	56	52	50	47	54
3	Sal	45	41	42	44	41	40	45	44
4	Sal	44	46	48	45	49	42	42	43
5	Sal	48	49	49	49	45	46	51	49
6	Sal	44	45	50	50	45	47	47	44
7	Sal	47	60	56	54	51	51	52	57
8	Sal	46	48	49	51	52	54	54	55
9	Sal	50	55	51	50	55	50	52	54
10	Sal	42	45	44	42	42	42	46	45
11	Sal	41	45	45	44	42	45	48	44
12	Sal	46	47	47	45	50	51	54	46
13	Sal	41	45	44	46	47	44	49	46
14	Sal	42	56	45	40	45	50	52	51
15	Sal	50	47	46	55	47	54	53	49
16	Sal	44	49	47	47	50	51	46	49

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
 Tolerance Development, Day 21
 Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	52	45	42	45	47	43	47
2	Eth	49	52	50	45	47	50	44	46
3	Eth	46	49	47	42	47	42	46	45
4	Eth	47	46	44	45	43	44	46	47
5	Eth	48	47	42	42	41	44	42	44
6	Eth	50	50	45	46	47	51	50	50
7	Eth	47	50	47	43	44	50	48	46
8	Eth	46	47	44	44	45	42	46	46
9	Eth	47	50	46	46	45	45	46	45
10	Eth	50	49	47	46	49	45	45	51
11	Eth	45	45	42	44	49	45	48	51
12	Eth	45	47	46	45	44	48	45	44
13	Eth	46	46	45	51	46	50	45	47
14	Eth	45	50	50	46	40	44	48	45
15	Eth	51	51	50	50	50	49	53	49
16	Eth	45	50	46	41	40	45	42	45
17	Eth	48	45	43	42	44	42	46	48
18	Eth	50	50	49	47	45	46	45	44
19	Eth	47	52	51	47	49	51	50	49
20	Eth	51	49	46	45	45	45	48	46
21	Eth	54	59	47	44	47	48	49	44
22	Eth	48	48	45	46	45	46	48	49
23	Eth	44	49	46	44	46	51	49	48
24	Eth	45	50	52	52	51	51	54	50
25	Eth	52	53	45	45	48	49	49	49
26	Eth	52	49	50	46	45	46	47	47
27	Eth	45	44	47	44	42	44	45	48
28	Eth	48	49	45	47	44	47	48	49
29	Eth	52	52	50	46	48	46	48	51
30	Eth	51	52	49	48	49	49	49	48
31	Eth	44	44	42	43	46	42	44	41
32	Eth	44	43	39	36	39	41	48	41
1	Sal	44	46	48	49	54	49	49	47
2	Sal	52	50	52	53	52	51	63	54
3	Sal	42	44	46	48	47	48	47	52
4	Sal	42	46	46	47	45	50	45	46
5	Sal	49	49	49	50	52	46	52	51
6	Sal	52	50	49	54	52	50	52	50
7	Sal	53	66	53	62	56	55	55	60
8	Sal	49	52	52	51	52	52	53	51
9	Sal	41	46	46	46	44	48	51	46
10	Sal	44	41	44	40	44	42	41	42
11	Sal	41	44	44	42	41	42	49	43
12	Sal	46	44	47	47	45	46	46	43
13	Sal	42	41	45	45	43	49	46	44
14	Sal	45	45	42	42	43	43	42	45
15	Sal	48	52	50	50	48	55	52	48
16	Sal	42	48	45	48	48	47	45	45

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Development, Day 22

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	52	49	48	47	46	47	46	47
2	Eth	49	52	47	44	46	46	47	49
3	Eth	41	44	44	41	43	44	48	44
4	Eth	42	45	39	42	39	40	41	42
5	Eth	45	49	44	42	44	48	42	44
6	Eth	48	48	46	43	46	46	47	46
7	Eth	39	44	43	44	43	42	43	47
8	Eth	47	42	43	41	40	42	42	40
9	Eth	43	49	45	40	41	41	40	41
10	Eth	47	51	45	43	43	47	42	46
11	Eth	40	44	42	39	43	40	46	46
12	Eth	49	47	41	40	40	41	41	41
13	Eth	45	48	44	43	44	46	48	45
14	Eth	46	45	41	40	40	41	42	44
15	Eth	45	44	41	41	43	41	47	46
16	Eth	48	53	52	49	47	48	48	48
17	Eth	46	46	43	44	41	42	42	44
18	Eth	46	48	46	44	42	43	44	43
19	Eth	44	46	48	45	45	45	44	48
20	Eth	48	45	49	46	44	45	44	43
21	Eth	50	49	45	43	44	43	49	42
22	Eth	44	45	44	45	42	42	43	41
23	Eth	47	46	46	45	46	45	51	48
24	Eth	48	49	48	51	44	51	49	49
25	Eth	54	48	47	45	45	46	46	44
26	Eth	44	49	36	43	42	44	49	44
27	Eth	51	45	45	48	45	44	45	48
28	Eth	48	52	48	44	44	45	45	49
29	Eth	48	49	49	45	45	49	46	50
30	Eth	42	46	50	49	48	43	45	45
31	Eth	43	41	41	40	44	39	37	37
32	Eth	41	37	38	35	35	36	38	37
1	Sal	42	49	46	49	49	48	49	51
2	Sal	44	48	44	47	47	49	46	44
3	Sal	39	39	42	41	41	42	46	45
4	Sal	38	45	46	46	46	44	44	43
5	Sal	50	49	49	45	45	49	47	48
6	Sal	46	45	43	45	45	49	47	46
7	Sal	48	56	57	49	49	54	51	56
8	Sal	49	49	49	49	49	49	47	45
9	Sal	48	54	51	53	52	49	52	49
10	Sal	42	44	41	42	40	42	44	44
11	Sal	41	41	42	42	50	45	44	44
12	Sal	48	48	48	46	47	52	47	48
13	Sal	39	43	43	43	50	48	47	43
14	Sal	43	43	42	45	43	45	43	43
15	Sal	39	43	45	44	48	49	51	50
16	Sal	41	45	40	45	45	42	43	48

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
Tolerance Test Day, with 1 or 10 day delay

Slip Angles, Absolute Values

Subj #	Group	Delay Period	Test Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
20	Eth	Short	Off	48	50	49	50	44	46	48	48
17	Eth	Short	Off	47	44	43	42	41	42	45	43
4	Eth	Short	Off	45	46	41	45	47	46	45	45
30	Eth	Short	Off	45	47	42	44	45	46	49	44
14	Eth	Short	Off	47	49	44	47	50	48	52	49
7	Eth	Short	Off	41	49	43	44	42	44	45	44
8	Eth	Short	Off	48	45	44	45	42	42	44	45
27	Eth	Short	Off	48	50	48	44	44	42	40	42
2	Eth	Short	On	50	53	43	41	39	38	48	46
18	Eth	Short	On	47	45	38	38	38	40	40	41
19	Eth	Short	On	47	51	45	41	40	45	40	43
22	Eth	Short	On	44	36	39	35	36	38	40	45
1	Eth	Short	On	46	44	43	37	38	39	39	43
13	Eth	Short	On	47	46	41	45	45	42	44	44
11	Eth	Short	On	45	41	40	34	35	41	37	36
21	Eth	Short	On	50	47	41	32	38	39	33	37
23	Eth	Long	Off	48	47	45	43	48	48	50	49
29	Eth	Long	Off	47	47	45	48	44	43	43	49
31	Eth	Long	Off	42	45	36	37	38	39	40	43
26	Eth	Long	Off	46	45	45	44	44	41	44	42
16	Eth	Long	Off	44	40	37	38	39	38	36	36
15	Eth	Long	Off	42	47	45	45	43	42	49	41
5	Eth	Long	Off	47	48	41	45	45	45	44	43
10	Eth	Long	Off	47	46	41	45	45	42	44	44
6	Eth	Long	On	53	53	49	46	48	45	48	53
3	Eth	Long	On	46	44	42	44	42	42	46	45
9	Eth	Long	On	46	51	46	45	45	42	42	42
28	Eth	Long	On	45	48	45	47	47	43	43	45
12	Eth	Long	On	46	51	46	45	45	42	42	42
25	Eth	Long	On	46	45	45	41	42	41	41	43
24	Eth	Long	On	48	48	45	45	45	44	49	47
32	Eth	Long	On	43	43	46	48	46	45	44	48
4	Sal	Long	Off	46	45	43	46	46	47	46	44
5	Sal	Long	Off	48	48	36	36	35	37	39	36
7	Sal	Long	Off	49	48	44	39	39	40	39	42
8	Sal	Long	Off	46	46	42	42	41	40	42	42
9	Sal	Long	Off	42	49	34	34	32	32	35	39
12	Sal	Long	Off	43	45	36	35	36	32	37	40
13	Sal	Long	Off	46	41	43	39	38	42	38	36
14	Sal	Long	Off	46	41	43	39	38	42	38	36
1	Sal	Long	On	47	44	44	43	48	43	41	46
2	Sal	Long	On	49	41	39	36	35	37	36	34
3	Sal	Long	On	38	41	41	34	30	38	39	39
6	Sal	Long	On	43	46	38	38	45	38	36	41
10	Sal	Long	On	41	43	38	36	35	38	33	33
11	Sal	Long	On	49	44	40	39	37	38	40	37
15	Sal	Long	On	42	49	42	40	42	410	42	38
16	Sal	Long	On	54	47	42	39	36	39	39	39

Chapter 4, Experiment 3a -- Stimulus Generalization Experiment, Tolerance Test First
CR Test Day, with 1 or 10 day delay

Slip Angles, Absolute Values											
Subj #	Group	Delay Period	Test Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
2	Eth	Short	Off	49	56	55	54	54	56	54	55
18	Eth	Short	Off	46	48	51	51	49	48	49	53
19	Eth	Short	Off	49	49	50	48	50	48	54	51
22	Eth	Short	Off	46	50	49	49	47	49	50	52
1	Eth	Short	Off	45	49	50	50	49	51	52	50
13	Eth	Short	Off	44	46	47	47	49	48	52	49
11	Eth	Short	Off	39	42	45	44	47	46	45	43
21	Eth	Short	Off	43	45	47	48	49	46	47	46
20	Eth	Short	On	49	54	50	48	51	54	49	52
17	Eth	Short	On	45	48	46	46	45	46	47	45
4	Eth	Short	On	46	45	46	46	49	42	44	45
30	Eth	Short	On	43	45	45	45	44	48	43	49
14	Eth	Short	On	48	47	48	49	56	52	50	51
7	Eth	Short	On	46	47	49	50	45	44	44	49
8	Eth	Short	On	41	49	46	48	49	47	46	49
27	Eth	Short	On	44	48	48	49	45	48	48	48
6	Eth	Long	Off	47	51	53	54	55	52	52	51
3	Eth	Long	Off	44	50	47	47	49	47	47	48
9	Eth	Long	Off	48	53	50	53	53	52	52	55
28	Eth	Long	Off	47	52	49	47	46	50	47	47
12	Eth	Long	Off	44	45	46	46	47	49	49	45
25	Eth	Long	Off	50	54	55	57	54	56	54	55
24	Eth	Long	Off	42	51	47	51	47	55	50	52
32	Eth	Long	Off	43	48	47	48	49	47	49	51
23	Eth	Long	On	47	50	46	46	45	46	49	47
29	Eth	Long	On	46	51	51	56	51	50	52	49
31	Eth	Long	On	43	46	45	45	46	48	45	51
26	Eth	Long	On	40	48	45	46	44	44	45	45
16	Eth	Long	On	43	46	44	45	47	47	46	50
15	Eth	Long	On	46	50	51	54	50	49	49	49
5	Eth	Long	On	46	48	49	51	45	46	45	47
10	Eth	Long	On	48	54	53	50	54	51	52	51
1	Sal	Long	Off	47	51	48	47	48	48	48	48
2	Sal	Long	Off	47	45	48	46	47	47	47	46
3	Sal	Long	Off	38	43	42	43	42	48	44	46
6	Sal	Long	Off	45	47	46	47	42	42	47	48
10	Sal	Long	Off	44	44	42	44	42	43	45	45
11	Sal	Long	Off	47	46	45	50	46	54	47	46
15	Sal	Long	Off	47	52	49	48	51	52	51	50
16	Sal	Long	Off	47	45	56	46	47	47	49	50
4	Sal	Long	On	47	45	50	45	49	46	51	45
5	Sal	Long	On	44	48	48	45	47	47	48	46
7	Sal	Long	On	49	48	50	51	50	52	56	51
8	Sal	Long	On	45	46	46	46	49	48	48	49
9	Sal	Long	On	46	48	49	48	47	52	47	47
12	Sal	Long	On	45	46	44	44	48	49	47	46
13	Sal	Long	On	44	45	44	44	43	43	46	45
14	Sal	Long	On	45	44	46	40	40	41	42	49

APPENDIX F

Raw data collected for Experiment 3b, Chapter 4

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 1
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	53	43	47	44	43	41	45	49
2	Eth	47	45	44	39	39	44	40	41
3	Eth	47	43	33	39	41	37	40	39
4	Eth	49	44	39	37	39	39	41	42
5	Eth	47	43	44	39	39	37	41	42
6	Eth	51	46	44	47	48	48	48	44
7	Eth	50	44	44	40	41	42	35	44
8	Eth	45	41	41	39	36	37	42	35
9	Eth	45	45	39	39	45	39	38	42
10	Eth	44	39	43	44	43	42	42	46
12	Eth	47	48	39	41	41	41	47	41
13	Eth	49	44	43	48	44	44	42	40
14	Eth	45	39	39	43	42	41	36	39
15	Eth	44	42	39	36	43	39	42	44
16	Eth	47	48	45	43	43	44	42	39
17	Eth	47	46	43	38	39	37	39	36
18	Eth	42	39	40	35	32	39	33	38
19	Eth	43	32	34	34	34	39	39	40
20	Eth	41	42	45	36	39	41	40	47
21	Eth	46	45	39	35	39	40	44	41
22	Eth	44	41	38	34	35	35	34	39
23	Eth	42	40	38	35	41	40	39	34
24	Eth	44	39	37	36	38	34	36	35
25	Eth	39	35	34	31	29	27	34	34
26	Eth	42	43	39	44	38	35	43	41
27	Eth	41	44	36	39	33	36	35	36
28	Eth	44	39	39	39	41	34	33	36
29	Eth	44	39	46	41	35	42	41	39
30	Eth	43	42	44	39	40	39	43	38
31	Eth	44	41	34	34	34	35	35	34
1	Sal	38	39	41	45	39	39	43	38
2	Sal	46	41	42	39	40	44	40	40
3	Sal	39	40	40	39	44	44	44	43
4	Sal	42	42	44	41	41	41	46	44
5	Sal	36	39	40	44	39	40	41	44
6	Sal	54	44	46	44	43	43	47	52
7	Sal	41	45	42	41	44	42	45	44
8	Sal	44	45	40	44	46	45	50	45
9	Sal	37	48	44	42	41	39	43	44
10	Sal	46	40	41	41	44	45	48	44
11	Sal	35	36	39	35	35	41	41	43
12	Sal	38	38	39	43	41	42	45	49
13	Sal	45	46	39	42	41	43	41	50
14	Sal	44	44	42	42	43	46	45	43
15	Sal	42	39	39	44	43	41	40	44
16	Sal	44	41	42	44	44	44	49	48

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 2

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	44	46	40	41	40	40	42
2	Eth	49	45	49	46	42	45	45	45
3	Eth	48	40	43	36	39	44	38	39
4	Eth	46	49	51	49	51	45	44	47
5	Eth	44	49	38	41	39	41	35	38
6	Eth	44	42	39	35	37	38	36	38
7	Eth	45	42	42	39	38	39	39	44
8	Eth	49	37	35	35	37	38	39	39
9	Eth	48	45	42	41	39	46	39	44
10	Eth	44	44	38	37	35	38	38	44
12	Eth	44	44	39	42	39	38	43	38
13	Eth	48	45	42	39	38	39	48	49
14	Eth	42	42	40	38	37	41	35	35
15	Eth	43	39	46	39	42	40	38	35
16	Eth	44	43	42	35	38	42	42	42
17	Eth	44	44	39	36	34	39	40	36
18	Eth	38	45	32	35	32	39	37	32
19	Eth	40	41	38	35	40	46	41	38
20	Eth	45	46	41	39	37	46	41	36
21	Eth	42	42	34	29	38	35	36	39
22	Eth	39	38	36	32	35	29	31	34
23	Eth	32	31	34	28	28	30	32	32
24	Eth	38	36	32	30	30	32	42	31
25	Eth	42	36	35	33	37	35	41	35
26	Eth	42	40	41	36	39	43	43	41
27	Eth	41	41	34	29	29	31	30	36
28	Eth	42	37	39	37	36	41	44	45
29	Eth	40	37	31	32	35	35	37	41
30	Eth	45	32	31	31	29	34	33	34
31	Eth	41	35	34	34	30	29	33	34
1	Sal	39	38	39	36	40	39	40	41
2	Sal	38	37	40	36	40	38	41	41
3	Sal	38	41	42	42	45	44	44	45
4	Sal	36	39	42	41	41	44	39	41
5	Sal	32	34	34	34	35	34	36	42
6	Sal	38	41	43	38	46	43	45	46
7	Sal	38	35	39	43	41	45	44	45
8	Sal	40	42	48	47	47	52	49	47
9	Sal	42	40	39	40	44	45	43	46
10	Sal	37	39	42	44	45	47	44	44
11	Sal	41	45	44	44	42	45	43	42
12	Sal	43	46	49	44	45	42	45	42
13	Sal	44	45	46	46	44	43	48	46
14	Sal	47	51	44	43	46	44	45	48
15	Sal	42	41	41	39	37	42	41	36
16	Sal	44	46	45	42	47	45	47	46

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 3
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	44	41	46	40	44	43	43
2	Eth	52	44	46	40	46	43	46	44
3	Eth	45	41	47	42	43	39	44	42
4	Eth	49	45	43	40	43	44	44	44
5	Eth	50	42	40	36	39	41	41	42
6	Eth	48	46	41	38	38	39	38	39
7	Eth	45	39	36	39	37	37	41	41
8	Eth	46	42	39	39	38	37	39	44
9	Eth	40	42	39	37	36	47	44	42
10	Eth	49	44	41	40	42	48	38	44
12	Eth	49	46	41	41	39	39	41	42
13	Eth	45	46	47	50	42	45	48	52
14	Eth	40	38	39	43	38	38	34	33
15	Eth	52	43	47	39	42	44	47	44
16	Eth	45	46	50	46	47	47	51	44
17	Eth	35	41	36	32	31	31	32	40
18	Eth	41	39	37	29	38	29	31	37
19	Eth	34	46	35	39	38	36	37	41
20	Eth	45	40	39	34	36	34	35	38
21	Eth	39	40	37	35	32	33	32	34
22	Eth	41	34	34	38	36	36	34	39
23	Eth	41	34	32	32	30	31	31	32
24	Eth	37	31	30	35	29	34	28	31
25	Eth	41	37	38	33	37	36	36	35
26	Eth	43	39	37	38	39	39	40	43
27	Eth	46	40	35	33	35	38	35	37
28	Eth	41	41	45	37	40	43	42	40
29	Eth	39	40	31	37	39	35	36	36
30	Eth	44	44	38	37	37	39	38	42
31	Eth	35	35	33	31	32	35	36	37
1	Sal	35	38	36	39	41	39	40	41
2	Sal	32	43	39	39	43	41	41	40
3	Sal	39	38	40	42	39	41	40	37
4	Sal	42	46	46	44	44	41	41	41
5	Sal	36	36	42	41	42	42	42	43
6	Sal	40	41	49	45	44	46	43	45
7	Sal	44	44	42	44	45	45	46	44
8	Sal	46	44	49	49	49	48	49	49
9	Sal	41	40	40	43	41	42	42	41
10	Sal	40	43	41	43	45	47	46	45
11	Sal	37	38	39	39	42	43	44	42
12	Sal	39	39	43	43	44	43	42	44
13	Sal	41	42	45	46	45	45	45	52
14	Sal	42	48	42	45	45	45	45	49
15	Sal	44	41	41	38	46	43	45	45
16	Sal	42	45	47	45	48	46	44	46

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 4

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	47	40	39	39	39	46	40
2	Eth	48	47	44	44	43	42	44	47
3	Eth	46	48	44	44	43	41	39	44
4	Eth	47	46	39	37	39	38	46	39
5	Eth	48	45	39	39	40	48	44	46
6	Eth	49	45	44	39	39	45	41	43
7	Eth	44	39	40	42	43	44	45	45
8	Eth	47	41	36	37	36	38	39	38
9	Eth	41	39	44	36	45	44	43	43
10	Eth	45	41	45	43	39	39	40	39
12	Eth	42	39	43	41	46	40	43	41
13	Eth	50	46	41	44	40	41	41	40
14	Eth	45	39	39	36	35	35	34	36
15	Eth	42	43	43	38	39	39	42	41
16	Eth	48	43	39	36	38	38	38	38
17	Eth	39	38	34	30	31	34	39	36
18	Eth	39	32	30	28	28	32	33	30
19	Eth	42	41	39	39	40	41	42	36
20	Eth	39	38	38	34	33	32	40	41
21	Eth	39	40	35	32	34	34	41	33
22	Eth	37	36	35	31	31	29	31	30
23	Eth	34	36	29	27	29	27	32	31
24	Eth	35	34	34	32	30	29	34	30
25	Eth	41	35	34	35	39	36	34	37
26	Eth	45	37	40	40	39	35	41	39
27	Eth	38	39	40	38	34	41	37	38
28	Eth	39	39	37	36	35	38	39	40
29	Eth	42	36	35	34	40	45	38	40
30	Eth	42	39	38	35	36	35	39	42
31	Eth	41	37	34	34	34	33	33	38
1	Sal	32	33	37	42	39	41	44	41
2	Sal	40	41	41	40	43	40	40	41
3	Sal	41	41	42	41	41	36	39	41
4	Sal	38	40	39	40	40	41	40	44
5	Sal	31	36	36	41	39	46	42	45
6	Sal	39	41	41	41	44	45	45	44
7	Sal	42	41	46	42	46	42	46	50
8	Sal	45	45	41	42	45	45	45	51
9	Sal	33	34	40	40	40	37	40	40
10	Sal	42	40	39	42	40	42	44	44
11	Sal	35	30	32	37	40	40	39	43
12	Sal	45	45	45	44	48	43	45	49
13	Sal	44	51	46	46	46	47	52	51
14	Sal	44	49	49	48	54	45	48	59
15	Sal	42	42	44	45	43	44	46	42
16	Sal	46	45	49	49	44	46	49	49

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 5

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	45	44	43	45	41	44	46	43
2	Eth	40	45	40	43	40	39	42	44
3	Eth	45	41	39	43	41	40	44	41
4	Eth	54	49	41	44	40	44	44	50
5	Eth	47	45	44	39	39	41	45	42
6	Eth	49	41	40	41	39	40	44	44
7	Eth	45	45	39	42	37	36	41	39
8	Eth	46	46	48	44	44	45	45	44
9	Eth	40	44	35	38	34	36	48	39
10	Eth	48	42	44	42	39	48	43	39
12	Eth	49	39	44	36	39	40	44	40
13	Eth	49	45	41	41	34	36	43	39
14	Eth	45	42	39	37	36	37	39	37
15	Eth	50	40	48	48	40	41	44	49
16	Eth	47	46	43	37	35	36	37	39
17	Eth	45	41	37	39	36	40	36	37
18	Eth	35	36	32	30	32	31	30	28
19	Eth	41	41	34	32	31	31	32	36
20	Eth	42	46	36	34	31	36	32	32
21	Eth	36	39	36	34	31	31	32	33
22	Eth	39	38	32	33	30	29	28	31
23	Eth	44	41	36	30	32	34	45	35
24	Eth	39	36	36	34	34	35	35	32
25	Eth	41	44	37	39	33	35	37	38
26	Eth	39	43	38	35	38	35	41	39
27	Eth	39	44	33	38	31	36	33	34
28	Eth	39	39	36	38	32	34	48	37
29	Eth	43	36	35	32	37	36	40	38
30	Eth	41	39	32	31	34	33	35	38
31	Eth	41	37	33	37	34	35	35	34
1	Sal	37	36	37	36	37	38	40	41
2	Sal	45	41	43	45	43	45	45	40
3	Sal	39	41	37	42	41	39	45	46
4	Sal	43	50	45	45	49	47	48	47
5	Sal	41	37	41	45	45	41	41	43
6	Sal	40	42	40	42	42	45	43	45
7	Sal	42	50	48	52	51	50	50	55
8	Sal	37	38	41	41	42	41	44	43
9	Sal	41	44	44	45	47	46	45	46
10	Sal	37	43	39	40	45	41	47	45
11	Sal	40	41	37	39	41	43	37	41
12	Sal	45	47	44	43	43	43	45	43
13	Sal	45	45	49	47	56	48	56	49
14	Sal	41	46	42	42	52	46	47	48
15	Sal	43	42	42	42	45	40	42	41
16	Sal	47	45	53	46	51	49	54	49

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 6
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	44	45	43	42	47	44	42	46
2	Eth	44	40	39	38	39	39	39	41
3	Eth	43	44	41	37	37	39	39	39
4	Eth	50	50	41	36	38	44	40	40
5	Eth	46	44	42	46	41	41	39	44
6	Eth	49	45	41	48	47	49	45	44
7	Eth	41	41	37	39	41	42	38	36
8	Eth	45	48	44	43	40	43	43	48
9	Eth	42	41	35	34	32	44	40	39
10	Eth	45	43	39	36	36	38	39	42
12	Eth	43	41	39	34	45	40	44	45
13	Eth	45	43	41	41	41	41	47	43
14	Eth	46	41	40	32	36	36	41	42
15	Eth	44	41	37	40	38	40	39	40
16	Eth	44	42	41	44	39	42	43	43
17	Eth	44	40	31	31	30	34	32	31
18	Eth	43	39	30	29	34	31	32	36
19	Eth	41	40	36	31	32	40	39	37
20	Eth	41	41	36	38	34	34	39	34
21	Eth	45	40	41	34	34	45	41	37
22	Eth	36	39	41	41	39	41	40	38
23	Eth	42	36	34	36	32	36	34	38
24	Eth	36	38	32	31	33	34	32	32
25	Eth	43	45	38	42	34	34	37	40
26	Eth	40	35	36	42	41	40	42	42
27	Eth	47	46	42	40	44	43	40	44
28	Eth	42	42	40	44	42	40	45	44
29	Eth	44	40	42	38	42	42	43	42
30	Eth	41	38	34	29	41	41	39	40
31	Eth	41	36	36	36	35	37	41	39
1	Sal	31	32	36	40	39	34	36	36
2	Sal	42	41	41	42	46	41	45	41
3	Sal	41	40	41	41	41	39	45	45
4	Sal	41	41	40	45	41	43	44	45
5	Sal	33	40	37	39	36	43	41	40
6	Sal	43	46	46	46	43	45	39	46
7	Sal	42	45	43	46	46	51	47	51
8	Sal	39	42	46	45	44	42	45	44
9	Sal	44	45	45	44	43	45	46	42
10	Sal	43	45	45	42	46	45	56	49
11	Sal	39	39	40	39	41	41	44	42
12	Sal	42	44	43	47	47	46	47	45
13	Sal	47	50	48	50	46	49	46	51
14	Sal	48	52	51	48	47	45	50	49
15	Sal	45	43	45	42	48	46	46	48
16	Sal	49	53	52	52	56	52	51	56

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 7

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	50	51	44	40	44	40	44	44
2	Eth	45	49	46	44	41	40	44	44
3	Eth	44	44	41	38	39	43	45	41
4	Eth	47	49	47	48	44	48	45	48
5	Eth	47	45	44	41	43	44	43	44
6	Eth	49	48	44	44	41	44	46	41
7	Eth	49	46	43	39	39	39	44	42
8	Eth	47	48	46	44	40	49	44	45
9	Eth	44	47	39	38	39	43	45	44
10	Eth	46	43	43	41	37	39	44	44
12	Eth	48	45	42	42	46	49	46	46
13	Eth	49	44	48	44	44	44	48	43
14	Eth	44	46	43	43	41	43	41	43
15	Eth	48	49	46	49	46	48	47	49
16	Eth	45	44	44	43	42	42	41	51
17	Eth	44	37	46	41	43	41	41	41
18	Eth	39	39	34	35	31	34	39	30
19	Eth	43	41	35	37	36	39	39	38
20	Eth	45	45	37	39	34	36	34	40
21	Eth	41	41	39	33	41	41	36	39
22	Eth	39	41	36	34	31	31	32	30
23	Eth	36	41	37	39	35	36	36	38
24	Eth	36	36	35	34	34	44	39	40
25	Eth	45	41	36	38	36	36	40	44
26	Eth	45	37	40	41	37	44	40	41
27	Eth	41	41	37	36	40	39	43	37
28	Eth	36	37	37	31	34	35	34	35
29	Eth	44	40	34	33	33	39	39	44
30	Eth	40	39	29	30	32	34	35	35
31	Eth	40	34	33	31	32	34	34	39
1	Sal	39	41	41	39	41	40	44	41
2	Sal	39	48	46	47	47	46	46	46
3	Sal	41	41	45	41	45	46	45	46
4	Sal	41	43	45	44	41	45	45	45
5	Sal	39	41	41	49	45	47	54	50
6	Sal	44	45	46	44	45	50	47	46
7	Sal	41	46	46	55	59	51	57	61
8	Sal	47	47	47	51	47	46	47	46
9	Sal	43	43	41	40	39	46	41	42
10	Sal	36	42	41	41	43	45	45	41
11	Sal	34	35	35	41	40	43	42	40
12	Sal	40	45	41	44	44	40	44	45
13	Sal	41	46	45	44	43	44	52	49
14	Sal	49	56	46	49	46	51	51	47
15	Sal	41	40	44	44	45	44	40	45
16	Sal	45	52	53	49	50	49	49	49

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 8

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	51	48	51	51	45	48	44	44
2	Eth	52	45	50	46	45	48	44	48
3	Eth	44	48	41	44	39	44	42	43
4	Eth	49	50	50	44	45	48	50	48
5	Eth	48	45	45	48	46	45	45	46
6	Eth	49	46	43	43	44	45	40	45
7	Eth	48	46	40	40	44	44	48	44
8	Eth	48	49	41	37	43	41	45	47
9	Eth	45	45	48	42	44	43	48	45
10	Eth	48	44	44	46	44	44	49	45
12	Eth	45	49	45	44	42	40	48	44
13	Eth	51	53	47	48	49	41	43	42
14	Eth	47	48	47	47	46	46	41	43
15	Eth	50	49	48	42	44	43	43	44
16	Eth	47	54	49	46	48	48	45	46
17	Eth	44	40	35	32	34	35	35	32
18	Eth	45	46	37	32	32	40	35	36
19	Eth	45	41	43	39	37	37	36	37
20	Eth	45	46	39	34	40	40	40	46
21	Eth	39	45	38	36	34	37	40	44
22	Eth	41	40	41	40	36	38	40	43
23	Eth	42	42	34	38	41	41	37	35
24	Eth	43	35	36	36	40	36	34	32
25	Eth	40	46	47	43	44	42	47	43
26	Eth	43	39	39	37	39	36	39	36
27	Eth	48	45	40	45	41	40	41	43
28	Eth	39	42	44	37	36	39	40	43
29	Eth	43	41	37	34	36	38	40	41
30	Eth	40	41	33	32	33	36	37	37
31	Eth	38	33	33	32	34	35	32	37
1	Sal	36	35	35	46	42	41	41	45
2	Sal	42	46	43	46	46	41	43	52
3	Sal	42	43	45	45	42	45	44	41
4	Sal	45	46	42	40	46	42	44	45
5	Sal	39	42	55	45	46	51	52	55
6	Sal	42	45	45	45	45	46	46	45
7	Sal	43	54	44	45	45	44	45	47
8	Sal	42	47	47	46	49	51	51	48
9	Sal	41	43	44	45	44	46	45	45
10	Sal	44	44	44	45	44	46	47	45
11	Sal	43	39	47	41	47	45	44	44
12	Sal	36	47	44	39	49	44	39	47
13	Sal	42	45	42	45	51	49	48	48
14	Sal	48	49	48	46	52	56	59	45
15	Sal	39	41	45	46	42	44	49	45
16	Sal	42	54	50	44	48	48	46	47

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 9

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	48	45	41	42	42	42	43
2	Eth	48	50	46	42	48	40	42	45
3	Eth	45	45	44	42	44	42	43	43
4	Eth	51	53	53	54	54	53	53	48
5	Eth	49	48	47	47	47	42	41	42
6	Eth	45	45	39	39	40	49	43	46
7	Eth	49	47	46	45	42	44	43	42
8	Eth	48	49	42	42	43	42	42	41
9	Eth	48	44	38	38	38	38	39	38
10	Eth	45	43	40	38	36	42	41	40
12	Eth	46	54	40	48	49	51	47	49
13	Eth	47	43	40	42	45	40	35	42
14	Eth	45	40	38	37	40	40	41	40
15	Eth	45	46	41	45	42	42	42	46
16	Eth	44	42	38	42	37	35	36	39
17	Eth	41	41	38	32	34	44	40	32
18	Eth	45	39	39	41	36	36	36	37
19	Eth	42	41	40	43	44	39	40	43
20	Eth	44	47	37	39	40	37	40	40
21	Eth	46	48	46	43	41	38	40	43
22	Eth	40	41	38	31	30	34	30	36
23	Eth	39	40	41	37	39	36	39	37
24	Eth	41	39	39	35	39	36	40	36
25	Eth	41	46	46	39	38	39	42	42
26	Eth	41	39	40	35	34	37	39	36
27	Eth	44	43	38	41	37	37	42	45
28	Eth	40	45	40	42	37	39	41	40
29	Eth	42	42	39	35	39	36	40	38
30	Eth	40	42	36	33	34	38	38	39
31	Eth	35	31	32	33	35	36	29	35
1	Sal	39	44	46	44	45	45	45	48
2	Sal	39	44	44	42	45	46	46	45
3	Sal	43	41	45	45	45	46	46	43
4	Sal	43	43	46	46	45	48	49	45
5	Sal	41	51	44	49	46	46	51	51
6	Sal	43	46	44	46	45	45	46	48
7	Sal	46	47	45	52	46	44	49	45
8	Sal	45	41	46	51	50	44	46	51
9	Sal	44	44	42	46	47	51	49	51
10	Sal	49	46	44	43	44	47	47	46
11	Sal	45	43	46	43	46	41	47	44
12	Sal	40	40	42	45	48	46	52	49
13	Sal	45	47	49	49	47	46	46	51
14	Sal	49	52	49	52	51	49	54	56
15	Sal	46	48	49	52	45	46	46	46
16	Sal	51	51	53	52	50	52	51	48

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 10

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	41	41	40	34	35	34	39	40
2	Eth	46	42	43	42	40	38	39	39
3	Eth	42	44	41	45	42	37	45	42
4	Eth	47	45	41	39	40	39	44	42
5	Eth	45	47	46	46	48	41	43	45
6	Eth	46	42	42	40	39	45	41	42
7	Eth	47	47	46	44	46	46	45	46
8	Eth	42	46	46	39	45	43	43	42
9	Eth	42	39	35	31	34	36	40	43
10	Eth	45	41	42	45	41	39	43	39
12	Eth	45	38	41	40	43	41	46	46
13	Eth	41	40	41	38	39	37	40	37
14	Eth	45	42	38	39	37	34	36	37
15	Eth	50	46	44	54	45	44	49	49
16	Eth	45	45	45	45	45	42	44	42
17	Eth	37	41	34	37	35	31	34	32
18	Eth	41	36	32	35	30	30	34	32
19	Eth	36	39	34	37	38	35	36	35
20	Eth	41	40	32	32	34	31	34	34
21	Eth	39	45	45	45	41	39	42	43
22	Eth	41	41	41	44	40	40	45	41
23	Eth	39	36	36	34	39	48	34	37
24	Eth	40	39	34	40	34	31	34	34
25	Eth	50	50	39	37	36	40	43	43
26	Eth	43	40	43	38	44	42	44	41
27	Eth	45	44	44	42	40	42	49	40
28	Eth	40	44	36	35	35	40	40	40
29	Eth	43	41	34	37	39	43	40	40
30	Eth	46	43	36	42	37	37	40	36
31	Eth	39	41	40	38	38	39	41	36
1	Sal	39	41	49	43	43	43	44	44
2	Sal	42	46	49	48	49	42	45	46
3	Sal	39	44	41	44	44	43	46	45
4	Sal	44	45	45	45	41	43	46	50
5	Sal	41	39	49	45	46	45	48	41
6	Sal	42	45	45	46	51	45	46	45
7	Sal	39	44	42	45	45	45	42	45
8	Sal	36	37	40	41	41	45	40	41
9	Sal	42	49	52	48	51	51	47	47
10	Sal	44	45	44	43	45	47	47	41
11	Sal	40	43	44	43	39	40	45	45
12	Sal	49	49	47	50	47	50	46	48
13	Sal	46	49	48	46	50	49	54	49
14	Sal	49	51	51	47	47	52	56	51
15	Sal	39	44	45	43	41	47	43	41
16	Sal	46	47	46	48	48	49	49	46

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 11

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	48	43	44	37	40	39	38
2	Eth	50	50	56	51	48	50	46	47
3	Eth	48	56	52	49	46	47	50	51
4	Eth	47	52	51	50	51	50	51	51
5	Eth	44	47	41	44	40	48	48	40
6	Eth	44	50	43	43	42	42	44	42
7	Eth	47	52	42	43	39	39	40	39
8	Eth	47	48	46	43	42	47	46	46
9	Eth	45	46	44	38	42	43	44	42
10	Eth	47	41	39	40	34	39	41	46
12	Eth	49	46	42	50	44	48	49	50
13	Eth	49	46	40	42	36	38	47	43
14	Eth	43	47	44	46	44	46	46	42
15	Eth	47	50	43	45	42	45	47	44
16	Eth	51	44	44	41	42	44	40	46
17	Eth	44	40	36	32	39	36	34	34
18	Eth	42	41	36	36	36	36	34	35
19	Eth	41	45	36	39	39	37	39	41
20	Eth	41	41	36	36	34	35	34	39
21	Eth	42	43	41	36	39	36	39	41
22	Eth	41	39	34	32	30	31	34	34
23	Eth	37	41	36	37	35	37	36	40
24	Eth	36	34	35	38	34	35	43	39
25	Eth	45	44	39	39	35	39	41	46
26	Eth	40	40	36	35	38	35	34	39
27	Eth	44	54	42	39	36	37	39	41
28	Eth	41	41	41	39	44	39	41	44
29	Eth	41	40	39	37	39	38	37	39
30	Eth	42	41	35	34	39	40	40	41
31	Eth	39	37	39	39	36	37	36	36
1	Sal	39	41	41	41	45	44	41	44
2	Sal	44	41	40	44	44	46	51	41
3	Sal	50	44	46	41	45	46	41	46
4	Sal	38	41	46	41	43	41	44	44
5	Sal	36	39	41	45	51	46	45	42
6	Sal	36	44	44	45	45	45	45	46
7	Sal	35	35	38	38	51	49	51	47
8	Sal	38	43	41	42	45	42	45	45
9	Sal	42	44	42	41	48	49	44	49
10	Sal	43	46	44	46	45	43	45	44
11	Sal	39	37	39	41	39	42	46	41
12	Sal	47	47	46	46	47	52	45	47
13	Sal	45	46	46	45	49	46	45	50
14	Sal	49	48	51	56	54	47	50	51
15	Sal	45	39	45	42	44	49	47	39
16	Sal	45	46	51	50	49	48	49	50

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 12

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	49	45	46	42	44	46	44
2	Eth	48	49	45	42	43	43	44	43
3	Eth	48	48	46	43	48	46	44	44
4	Eth	44	47	44	41	41	40	43	45
5	Eth	48	44	44	40	39	43	48	39
6	Eth	46	52	45	44	44	44	48	45
7	Eth	52	48	48	46	44	44	45	47
8	Eth	49	50	54	49	49	45	45	49
9	Eth	44	46	48	49	51	48	46	42
10	Eth	44	43	34	40	36	38	42	36
12	Eth	46	48	47	42	43	44	44	48
13	Eth	52	44	48	40	41	43	44	44
14	Eth	46	48	42	46	39	42	45	48
15	Eth	44	45	43	41	44	42	43	48
16	Eth	50	47	45	45	44	39	41	43
17	Eth	41	41	35	35	35	35	32	34
18	Eth	41	40	35	35	35	31	32	34
19	Eth	44	41	44	45	45	40	40	41
20	Eth	41	41	36	36	34	40	36	39
21	Eth	46	45	39	39	39	41	39	41
22	Eth	45	41	39	36	34	38	34	36
23	Eth	36	41	35	35	32	40	36	36
24	Eth	36	41	36	40	39	36	33	35
25	Eth	48	44	43	40	39	46	41	44
26	Eth	42	41	37	35	38	36	40	39
27	Eth	44	50	49	45	43	42	44	44
28	Eth	40	40	39	38	34	36	34	38
29	Eth	42	41	37	35	39	41	41	39
30	Eth	44	39	39	39	39	37	39	41
31	Eth	39	39	37	44	38	36	41	39
1	Sal	44	41	42	49	45	45	43	41
2	Sal	42	51	51	51	51	46	44	51
3	Sal	39	41	45	46	48	45	48	45
4	Sal	41	45	41	45	55	43	48	49
5	Sal	40	45	46	51	49	44	48	48
6	Sal	44	45	49	44	49	46	50	51
7	Sal	38	41	46	45	42	44	42	51
8	Sal	41	45	48	46	43	46	46	45
9	Sal	42	46	49	49	51	45	44	44
10	Sal	45	49	46	46	46	45	44	41
11	Sal	40	44	44	41	41	44	41	45
12	Sal	44	49	49	46	49	49	48	47
13	Sal	44	51	49	49	48	49	48	47
14	Sal	46	49	54	49	45	46	64	51
15	Sal	38	39	44	44	43	44	44	47
16	Sal	45	46	47	46	51	47	49	49

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 13

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	49	46	47	42	44	44	46	44
2	Eth	54	48	46	48	48	50	49	48
3	Eth	50	49	46	49	41	48	44	48
4	Eth	49	49	48	46	44	47	44	48
5	Eth	48	48	44	41	45	45	42	43
6	Eth	47	47	46	44	43	44	43	44
7	Eth	44	46	48	46	48	48	45	49
8	Eth	49	48	48	46	44	47	44	48
9	Eth	44	48	44	45	49	48	44	45
10	Eth	49	46	44	43	43	44	48	43
12	Eth	48	51	48	45	44	49	48	52
13	Eth	54	48	55	51	50	50	56	49
14	Eth	46	45	44	42	43	44	45	43
15	Eth	46	49	43	47	48	45	49	47
16	Eth	44	50	49	49	48	52	45	48
17	Eth	41	45	35	37	34	36	35	34
18	Eth	40	39	32	34	36	40	39	36
19	Eth	43	43	38	37	36	35	40	39
20	Eth	42	44	35	40	35	35	36	40
21	Eth	39	41	34	37	36	39	36	40
22	Eth	40	42	33	33	32	33	35	36
23	Eth	40	43	41	36	41	40	45	42
24	Eth	40	40	38	35	38	38	37	34
25	Eth	44	41	38	34	36	36	35	36
26	Eth	41	45	34	36	40	35	38	40
27	Eth	40	41	37	36	39	36	43	36
28	Eth	36	40	37	35	36	34	34	36
29	Eth	44	40	36	34	38	41	40	41
30	Eth	41	42	36	32	34	36	36	37
31	Eth	29	30	30	29	29	29	30	29
1	Sal	39	46	45	41	45	45	45	39
2	Sal	49	51	46	50	42	45	45	45
3	Sal	43	46	45	50	45	45	42	45
4	Sal	46	49	44	45	45	49	44	45
5	Sal	35	39	40	48	45	51	41	49
6	Sal	48	50	46	54	55	51	50	46
7	Sal	40	43	41	39	44	44	51	60
8	Sal	39	43	41	43	45	46	45	45
9	Sal	40	46	42	41	44	40	42	40
10	Sal	34	36	38	41	40	40	41	42
11	Sal	37	41	39	38	40	41	40	42
12	Sal	44	44	46	45	45	46	45	48
13	Sal	44	48	45	45	45	46	46	50
14	Sal	47	54	50	56	52	55	57	51
15	Sal	39	40	40	41	41	44	45	44
16	Sal	46	45	49	48	52	51	51	50

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 14

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	47	45	44	42	44	43	47
2	Eth	47	45	48	48	44	44	44	45
3	Eth	47	50	48	45	45	41	43	45
4	Eth	49	48	48	45	47	47	47	48
5	Eth	50	54	41	48	45	41	48	44
6	Eth	44	49	44	44	42	44	44	44
7	Eth	53	48	47	42	48	51	52	52
8	Eth	46	52	48	46	45	49	46	45
9	Eth	48	45	43	47	47	44	44	44
10	Eth	45	43	44	41	49	45	43	44
12	Eth	49	51	45	45	48	51	49	50
13	Eth	47	48	48	41	39	48	47	41
14	Eth	47	44	42	41	42	41	44	41
15	Eth	44	49	46	48	46	49	45	47
16	Eth	48	50	44	42	43	43	45	43
17	Eth	45	38	34	31	34	36	38	40
18	Eth	45	36	35	36	35	35	36	38
19	Eth	45	38	43	38	38	39	38	37
20	Eth	45	43	39	34	34	40	36	43
21	Eth	45	43	45	42	38	36	40	42
22	Eth	44	45	38	38	38	36	37	36
23	Eth	41	40	34	34	36	35	35	41
24	Eth	36	35	32	34	36	35	33	32
25	Eth	45	43	43	43	45	44	42	41
26	Eth	44	45	42	41	42	43	40	41
27	Eth	45	45	38	36	39	38	40	41
28	Eth	41	44	39	42	45	46	46	42
29	Eth	41	42	42	37	37	40	38	41
30	Eth	39	36	40	38	37	40	41	42
31	Eth	32	32	32	32	32	34	36	32
1	Sal	45	46	46	45	45	44	50	47
2	Sal	44	45	41	42	42	45	45	43
3	Sal	39	44	45	42	41	42	45	44
4	Sal	45	44	45	45	45	45	44	47
5	Sal	41	45	43	43	48	46	44	42
6	Sal	40	45	42	45	45	50	49	60
7	Sal	36	36	42	43	43	46	47	49
8	Sal	40	39	44	44	44	41	45	42
9	Sal	45	41	46	42	45	47	45	47
10	Sal	42	42	41	38	44	46	42	41
11	Sal	39	44	41	45	43	45	47	45
12	Sal	43	42	41	45	42	43	48	44
13	Sal	44	45	45	50	46	47	50	48
14	Sal	48	51	48	47	50	50	50	47
15	Sal	41	41	42	41	45	42	44	43
16	Sal	42	50	45	46	45	47	44	46

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 15

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	52	50	49	45	44	45	47	52
2	Eth	49	50	48	50	49	50	49	50
3	Eth	49	50	48	45	45	45	47	48
4	Eth	50	53	49	50	48	50	50	49
5	Eth	49	46	44	41	41	48	47	48
6	Eth	48	48	46	49	45	53	48	48
7	Eth	47	48	51	48	48	52	48	45
8	Eth	50	50	48	45	46	46	48	47
9	Eth	43	45	48	41	41	43	44	41
10	Eth	47	46	43	39	39	41	44	45
12	Eth	45	48	45	46	45	45	44	45
13	Eth	51	52	42	39	48	44	43	49
14	Eth	47	42	41	45	45	45	44	47
15	Eth	45	49	43	44	43	44	41	45
16	Eth	48	45	45	36	39	37	40	42
17	Eth	44	39	34	39	34	33	34	35
18	Eth	41	40	34	36	35	35	35	41
19	Eth	42	41	32	36	39	38	35	32
20	Eth	41	41	36	35	34	32	34	32
21	Eth	43	45	39	35	38	38	44	40
22	Eth	45	41	36	39	36	36	40	36
23	Eth	44	37	37	39	40	35	38	45
24	Eth	39	34	34	35	32	34	41	37
25	Eth	45	41	42	40	43	40	46	46
26	Eth	44	51	41	41	40	40	41	44
27	Eth	45	45	42	41	37	38	41	39
28	Eth	40	42	41	40	50	42	40	48
29	Eth	45	40	41	40	40	42	44	48
30	Eth	44	41	34	32	34	40	44	41
31	Eth	36	36	41	34	41	34	34	37
1	Sal	40	41	41	44	44	42	40	42
2	Sal	39	45	44	47	45	40	44	45
3	Sal	44	45	41	43	41	44	42	40
4	Sal	41	41	42	41	45	42	41	41
5	Sal	41	49	50	47	51	50	50	55
6	Sal	45	49	44	45	49	45	47	49
7	Sal	34	36	38	44	42	48	50	47
8	Sal	40	43	45	44	43	43	43	42
9	Sal	41	46	49	50	45	45	47	44
10	Sal	45	43	45	48	46	43	45	45
11	Sal	42	40	42	42	42	46	45	45
12	Sal	42	45	51	50	45	49	50	45
13	Sal	45	45	45	48	47	45	46	51
14	Sal	46	51	51	46	50	48	52	50
15	Sal	38	45	39	44	43	41	47	46
16	Sal	50	48	51	52	52	49	54	50

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 16

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	47	44	44	41	46	45	44	48
2	Eth	48	46	45	46	46	44	45	44
3	Eth	45	49	48	46	46	45	48	44
4	Eth	45	48	48	45	48	49	48	47
5	Eth	49	44	44	41	41	45	48	47
6	Eth	46	45	46	48	44	45	47	43
7	Eth	50	48	42	50	44	48	47	51
8	Eth	45	49	46	45	46	45	46	47
9	Eth	45	46	44	45	45	43	45	47
10	Eth	46	40	45	37	37	40	40	44
12	Eth	47	45	49	47	45	49	45	50
13	Eth	47	48	41	45	40	38	43	43
14	Eth	41	45	41	48	43	48	44	43
15	Eth	47	46	45	44	44	45	45	46
16	Eth	49	44	41	41	40	40	47	45
17	Eth	39	46	34	36	35	39	39	45
18	Eth	42	35	35	34	34	37	38	39
19	Eth	44	41	40	39	38	38	39	38
20	Eth	44	43	44	36	43	41	42	39
21	Eth	48	39	40	41	41	40	40	41
22	Eth	44	41	48	38	34	36	38	40
23	Eth	41	40	38	39	35	38	40	39
24	Eth	36	39	37	39	34	35	35	34
25	Eth	46	43	39	37	38	39	40	41
26	Eth	44	44	41	41	40	44	42	42
27	Eth	45	54	39	42	42	45	41	42
28	Eth	42	43	42	46	46	47	46	43
29	Eth	43	44	38	41	41	37	39	42
30	Eth	42	42	37	35	36	34	35	39
31	Eth	39	42	38	42	39	42	40	35
1	Sal	44	45	43	40	49	44	43	44
2	Sal	44	46	41	40	48	48	47	48
3	Sal	44	45	44	44	44	43	44	43
4	Sal	39	45	41	46	43	45	44	49
5	Sal	34	42	48	45	46	43	44	43
6	Sal	48	50	47	48	48	50	49	46
7	Sal	34	40	41	45	46	43	44	41
8	Sal	41	44	41	45	47	49	44	45
9	Sal	45	48	48	43	46	45	46	46
10	Sal	48	48	46	46	48	47	46	46
11	Sal	44	44	46	44	46	44	42	44
12	Sal	50	46	45	49	46	49	47	46
13	Sal	46	50	47	47	47	48	49	52
14	Sal	49	54	51	52	48	52	55	56
15	Sal	44	49	45	46	41	44	43	47
16	Sal	51	46	51	52	53	52	52	53

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 17
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	48	49	45	39	40	45	47	44
2	Eth	49	50	43	43	42	43	45	48
3	Eth	45	49	41	40	42	48	47	48
4	Eth	46	48	45	42	48	44	46	47
5	Eth	46	49	42	44	43	41	44	44
6	Eth	44	47	47	45	44	43	44	43
7	Eth	46	50	46	49	45	45	45	43
8	Eth	44	51	47	43	39	44	47	47
9	Eth	45	45	44	41	43	47	43	45
10	Eth	43	46	40	40	39	43	39	41
12	Eth	45	49	43	44	43	42	48	46
13	Eth	47	48	46	39	40	42	45	39
14	Eth	43	44	43	39	39	41	44	39
15	Eth	49	47	48	47	44	47	45	45
16	Eth	46	44	44	45	44	44	47	41
17	Eth	44	37	36	38	36	37	39	36
18	Eth	35	34	32	35	34	38	36	36
19	Eth	41	44	34	34	33	35	36	41
20	Eth	41	39	35	31	31	34	39	36
21	Eth	44	45	42	38	41	42	43	39
22	Eth	39	41	36	31	32	36	35	35
23	Eth	39	34	37	35	37	35	36	37
24	Eth	42	37	34	39	35	34	37	34
25	Eth	46	47	43	46	39	41	42	43
26	Eth	47	46	46	46	46	44	49	54
27	Eth	47	43	41	39	42	45	41	48
28	Eth	44	45	41	42	39	42	43	44
29	Eth	42	42	41	36	38	39	43	41
30	Eth	39	37	34	34	39	38	39	36
31	Eth	33	41	37	39	41	42	41	37
1	Sal	39	34	35	34	34	36	35	38
2	Sal	41	46	46	45	44	46	45	45
3	Sal	44	44	41	45	45	44	41	45
4	Sal	43	46	44	45	45	47	49	44
5	Sal	34	37	41	37	41	45	44	45
6	Sal	44	41	41	44	45	46	46	46
7	Sal	41	40	44	42	45	41	41	42
8	Sal	39	39	41	39	41	41	46	45
9	Sal	44	46	42	45	46	42	46	51
10	Sal	44	42	45	46	44	42	43	46
11	Sal	42	44	44	46	44	44	46	46
12	Sal	47	48	47	46	50	49	49	46
13	Sal	45	46	46	49	46	45	44	48
14	Sal	51	52	51	49	50	48	61	48
15	Sal	46	44	46	49	46	51	46	46
16	Sal	47	54	52	51	49	55	52	51

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 18

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	51	46	45	44	44	44	49	43
2	Eth	48	49	48	47	47	45	45	48
3	Eth	46	51	45	44	46	49	49	44
4	Eth	47	50	44	45	50	49	47	49
5	Eth	48	48	44	50	48	47	48	48
6	Eth	47	48	45	44	49	45	49	44
7	Eth	55	56	52	49	48	52	48	52
8	Eth	47	50	51	50	45	47	48	48
9	Eth	48	50	44	47	48	44	46	47
10	Eth	45	44	42	40	41	40	41	42
12	Eth	49	48	51	51	54	54	55	47
13	Eth	52	50	41	45	46	52	45	46
14	Eth	45	45	45	42	39	41	40	41
15	Eth	45	51	41	46	42	50	46	50
16	Eth	45	49	44	40	39	41	41	40
17	Eth	39	41	41	32	34	31	34	36
18	Eth	36	31	36	36	31	35	34	34
19	Eth	41	43	34	37	38	34	39	39
20	Eth	38	35	32	29	31	30	34	32
21	Eth	44	44	39	34	39	41	47	41
22	Eth	39	41	34	30	30	32	32	35
23	Eth	46	44	41	34	41	40	39	45
24	Eth	37	39	39	38	40	39	41	36
25	Eth	47	42	38	37	37	39	40	39
26	Eth	44	46	41	46	40	43	41	40
27	Eth	45	44	42	42	42	41	43	41
28	Eth	46	48	49	46	45	49	45	51
29	Eth	44	42	41	43	40	43	41	43
30	Eth	43	44	42	42	43	44	46	45
31	Eth	37	40	41	34	42	39	34	35
1	Sal	37	42	41	39	36	37	43	39
2	Sal	38	36	41	41	44	45	42	41
3	Sal	37	39	40	42	42	41	46	41
4	Sal	44	42	42	42	39	41	44	46
5	Sal	39	39	44	45	45	44	43	44
6	Sal	41	44	43	45	51	46	45	51
7	Sal	37	41	43	40	44	44	48	45
8	Sal	43	44	43	45	49	43	43	46
9	Sal	45	44	45	45	42	45	46	46
10	Sal	46	49	46	47	48	49	45	51
11	Sal	42	46	48	46	46	46	45	46
12	Sal	49	45	49	46	48	51	52	46
13	Sal	46	46	47	46	48	46	47	49
14	Sal	46	46	47	46	48	46	47	49
14	Sal	51	50	51	50	55	58	59	54
15	Sal	42	46	46	47	48	46	49	46
15	Sal	42	46	46	47	48	46	49	46
16	Sal	47	49	47	48	54	56	52	49

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 19
Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	52	50	45	46	42	41	48	45
2	Eth	48	48	50	49	44	45	50	46
3	Eth	47	47	50	42	45	42	46	45
4	Eth	47	52	50	51	46	51	51	47
5	Eth	50	46	47	46	45	47	50	45
6	Eth	46	46	46	45	46	44	47	44
7	Eth	47	50	51	50	46	47	45	50
8	Eth	46	49	46	49	47	47	46	49
9	Eth	45	49	46	45	46	50	46	45
10	Eth	46	42	39	38	37	40	37	44
12	Eth	48	48	49	47	49	46	54	51
13	Eth	47	54	47	46	47	48	49	48
14	Eth	42	45	41	40	41	41	42	45
15	Eth	48	50	46	43	39	43	45	50
16	Eth	49	45	47	42	43	45	45	45
17	Eth	41	41	41	38	37	36	38	39
18	Eth	44	39	39	38	37	37	37	36
19	Eth	43	39	40	41	43	43	43	44
20	Eth	41	43	39	38	43	39	40	42
21	Eth	46	49	46	43	45	46	48	46
22	Eth	40	41	35	33	32	36	33	31
23	Eth	40	42	41	39	36	41	39	40
24	Eth	42	40	39	36	36	34	34	35
25	Eth	47	41	42	40	39	39	44	42
26	Eth	46	45	46	45	42	45	42	46
27	Eth	45	46	41	41	45	41	44	46
28	Eth	42	45	49	46	50	45	44	46
29	Eth	45	42	42	40	42	40	42	44
30	Eth	41	45	45	45	42	41	42	44
31	Eth	41	47	44	42	42	43	41	42
1	Sal	44	44	45	40	43	41	43	47
2	Sal	43	44	40	43	46	45	43	45
3	Sal	41	47	45	45	44	45	42	44
4	Sal	44	46	46	49	44	45	46	49
5	Sal	41	49	51	48	48	46	48	52
6	Sal	40	42	45	45	47	43	47	45
7	Sal	36	40	43	44	43	45	51	47
8	Sal	41	43	44	41	44	48	45	46
9	Sal	45	47	50	50	49	52	46	50
10	Sal	44	46	45	45	44	44	46	50
11	Sal	46	46	45	45	45	45	47	45
12	Sal	47	50	48	48	49	49	46	49
13	Sal	47	47	47	47	45	49	56	48
14	Sal	52	55	54	54	54	50	53	59
15	Sal	45	43	46	46	45	45	49	48
16	Sal	50	49	50	50	46	46	47	51

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 20

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	50	50	49	48	50	50	50	54
2	Eth	46	40	45	40	42	45	45	45
3	Eth	43	43	41	38	41	43	47	44
4	Eth	48	50	45	46	44	45	49	45
5	Eth	47	50	43	45	42	43	50	44
6	Eth	42	45	47	46	47	50	50	49
7	Eth	49	52	46	39	39	41	38	35
8	Eth	50	54	49	45	46	45	50	50
9	Eth	46	48	45	47	46	47	50	46
10	Eth	43	49	42	41	40	40	43	40
12	Eth	49	49	47	46	43	45	48	49
13	Eth	50	50	47	42	40	41	47	49
14	Eth	43	45	45	40	44	45	43	46
15	Eth	49	49	43	44	40	45	48	49
16	Eth	47	47	46	42	43	41	44	50
17	Eth	42	41	35	35	33	39	41	41
18	Eth	41	39	36	41	36	35	35	34
19	Eth	45	42	40	38	36	40	44	43
20	Eth	40	43	34	35	34	34	37	39
21	Eth	45	47	54	46	45	42	46	49
22	Eth	39	40	39	35	36	36	34	39
23	Eth	38	42	37	39	35	39	41	39
24	Eth	39	40	35	35	36	39	35	34
25	Eth	44	42	44	43	45	41	42	41
26	Eth	49	50	46	45	43	44	44	49
27	Eth	44	54	41	42	44	46	45	46
28	Eth	47	48	45	42	42	44	43	41
29	Eth	45	42	43	45	41	43	45	45
30	Eth	43	40	42	44	35	42	40	40
31	Eth	35	41	41	41	41	40	42	37
1	Sal	40	46	41	39	42	45	42	43
2	Sal	41	48	41	45	39	42	41	44
3	Sal	44	44	42	42	44	42	44	45
4	Sal	43	45	50	44	46	46	48	42
5	Sal	42	48	54	49	50	51	46	45
6	Sal	41	50	47	49	47	41	49	45
7	Sal	44	45	49	47	49	49	46	44
8	Sal	44	43	49	47	48	48	46	44
9	Sal	43	49	49	46	45	44	45	49
10	Sal	45	48	45	45	49	45	47	47
11	Sal	45	45	43	46	44	44	45	45
12	Sal	47	51	47	49	50	50	51	49
13	Sal	48	45	46	46	46	49	48	51
14	Sal	54	56	64	54	54	55	57	56
15	Sal	49	41	42	51	47	46	47	51
16	Sal	43	47	48	49	47	51	50	51

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 21

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	51	48	47	45	45	46	47	50
2	Eth	50	45	45	48	50	46	49	48
3	Eth	42	49	49	45	46	46	46	47
4	Eth	44	50	53	49	49	46	52	48
5	Eth	50	50	44	45	46	43	45	47
6	Eth	46	52	41	45	42	44	45	46
7	Eth	44	50	49	43	45	49	45	47
8	Eth	51	51	49	50	44	47	47	49
9	Eth	42	46	46	47	46	46	46	46
10	Eth	46	42	42	40	42	46	41	41
12	Eth	49	50	51	55	50	48	54	46
13	Eth	48	55	50	45	46	47	53	53
14	Eth	45	50	49	46	46	42	42	44
15	Eth	49	53	52	42	42	50	50	53
16	Eth	46	50	45	49	49	49	46	49
17	Eth	43	48	44	41	39	44	44	41
18	Eth	45	45	49	41	44	40	44	46
19	Eth	44	46	42	36	44	41	46	49
20	Eth	44	45	39	39	41	39	43	42
21	Eth	48	48	46	38	48	48	48	46
22	Eth	45	40	36	38	39	39	41	39
23	Eth	46	43	42	41	43	40	46	45
24	Eth	43	41	44	42	43	41	39	39
25	Eth	41	42	40	39	40	42	42	45
26	Eth	47	41	42	42	41	41	42	42
27	Eth	45	46	41	43	44	45	42	44
28	Eth	44	44	44	42	43	43	44	46
29	Eth	41	44	45	44	39	42	39	40
30	Eth	43	40	41	39	39	43	38	40
31	Eth	39	43	42	36	37	38	39	44
1	Sal	42	45	46	45	48	45	45	52
2	Sal	46	49	48	49	49	50	45	46
3	Sal	46	46	44	44	49	44	48	46
4	Sal	48	44	52	46	46	51	48	52
5	Sal	45	49	50	48	56	51	62	53
6	Sal	52	49	52	48	49	48	51	50
7	Sal	46	49	49	50	53	51	54	50
8	Sal	47	46	49	46	45	48	48	50
9	Sal	45	47	45	46	44	45	45	42
10	Sal	43	41	42	40	42	43	44	45
11	Sal	41	41	43	42	42	45	42	43
12	Sal	43	45	45	46	47	44	50	48
13	Sal	43	46	44	44	47	45	48	48
14	Sal	44	48	53	50	50	50	55	54
15	Sal	46	44	47	47	48	48	52	49
16	Sal	40	46	48	49	51	48	50	45

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
Tolerance Development, Day 22

Slip Angles, Absolute Values

Subj #	Group	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	52	50	46	45	49	49	50	49
2	Eth	47	52	49	49	49	48	54	49
3	Eth	45	51	49	45	49	46	50	50
4	Eth	50	49	50	60	51	51	53	51
5	Eth	48	50	50	44	48	52	48	46
6	Eth	50	51	48	50	47	46	51	48
7	Eth	47	47	49	52	44	51	46	48
8	Eth	49	48	46	47	44	46	50	45
9	Eth	45	49	47	47	48	50	49	53
10	Eth	47	44	40	39	41	40	43	40
12	Eth	51	52	55	43	44	50	49	52
13	Eth	45	51	51	49	49	53	48	46
14	Eth	44	45	44	41	46	48	41	44
15	Eth	49	52	50	48	49	48	47	50
16	Eth	52	51	47	45	50	46	47	48
17	Eth	41	45	44	41	40	40	41	40
18	Eth	41	44	40	34	36	36	34	37
19	Eth	42	42	41	39	39	41	41	38
20	Eth	42	37	36	35	33	42	39	36
21	Eth	47	45	43	45	41	44	44	42
22	Eth	42	39	35	35	33	35	36	35
23	Eth	40	39	37	36	38	36	40	43
24	Eth	39	38	36	35	36	34	35	34
25	Eth	43	45	43	44	44	41	44	46
26	Eth	45	42	42	40	39	42	42	44
27	Eth	45	45	41	44	43	46	45	45
28	Eth	45	43	42	40	42	40	48	45
29	Eth	44	43	40	41	40	42	42	39
30	Eth	41	40	40	37	42	37	39	40
31	Eth	39	42	39	39	38	39	39	45
1	Sal	42	46	44	42	42	43	42	47
2	Sal	43	47	46	49	49	44	46	43
3	Sal	43	45	44	44	44	41	44	49
4	Sal	43	45	43	47	47	46	42	44
5	Sal	42	46	46	45	45	49	43	49
6	Sal	40	45	45	42	42	47	45	46
7	Sal	42	43	44	45	45	49	47	43
8	Sal	40	41	40	41	41	44	40	45
9	Sal	43	44	42	51	44	51	45	44
10	Sal	44	42	44	44	43	48	43	44
11	Sal	41	43	43	45	41	45	46	45
12	Sal	47	46	46	47	49	48	46	47
13	Sal	46	46	47	46	48	46	46	46
14	Sal	44	46	49	47	47	48	53	46
15	Sal	44	45	44	45	46	45	45	45
16	Sal	41	40	45	46	47	47	55	48

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
 CR Test Day, with 1 or 10 day delay, all rats get saline
 Slip Angles, Absolute Values

Subj #	Group	Delay Period	Test Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	Long	Off	48	59	54	51	50	51	51	50
15	Eth	Long	Off	46	54	53	55	54	56	56	55
22	Eth	Long	Off	41	43	45	44	44	45	41	44
7	Eth	Long	Off	48	48	52	53	56	50	51	54
17	Eth	Long	Off	42	45	45	48	44	45	46	46
29	Eth	Long	Off	39	42	45	48	43	46	45	45
4	Eth	Long	Off	48	54	50	49	50	54	51	53
30	Eth	Long	Off	44	48	49	51	47	48	46	48
23	Eth	Long	On	43	43	42	42	46	46	42	42
20	Eth	Long	On	43	46	47	47	48	46	46	45
28	Eth	Long	On	42	45	44	46	48	49	51	45
16	Eth	Long	On	49	45	53	56	54	54	51	50
14	Eth	Long	On	45	49	49	48	49	49	50	48
13	Eth	Long	On	49	52	51	53	57	52	54	53
6	Eth	Long	On	46	52	52	45	50	50	45	50
31	Eth	Long	On	39	51	44	50	47	52	49	45
24	Eth	Short	Off	39	41	45	44	42	43	44	45
27	Eth	Short	Off	43	47	49	47	47	51	49	47
3	Eth	Short	Off	45	49	49	47	49	46	47	50
12	Eth	Short	Off	49	57	52	54	52	55	55	54
8	Eth	Short	Off	46	51	50	56	56	50	48	49
2	Eth	Short	Off	44	48	48	51	49	49	52	47
21	Eth	Short	Off	44	49	49	51	50	49	50	51
19	Eth	Short	On	39	39	39	40	42	43	44	40
25	Eth	Short	On	46	46	48	46	48	47	47	47
26	Eth	Short	On	49	48	47	49	47	47	46	46
9	Eth	Short	On	43	49	46	47	46	48	46	46
5	Eth	Short	On	42	45	42	49	44	44	44	45
10	Eth	Short	On	45	44	47	50	46	51	47	48
18	Eth	Short	On	39	43	46	40	42	45	44	44
2	Sal	Long	off	41	42	46	47	43	45	45	46
3	Sal	Long	off	43	45	42	45	42	44	45	45
7	Sal	Long	off	45	49	53	47	47	48	48	48
8	Sal	Long	off	39	43	45	45	47	43	42	46
11	Sal	Long	off	44	46	45	46	44	46	49	50
12	Sal	Long	off	44	49	44	44	47	50	48	50
13	Sal	Long	off	47	42	43	46	45	45	46	48
15	Sal	Long	off	49	49	49	50	46	48	48	50
1	Sal	Long	on	44	44	45	42	42	46	43	42
4	Sal	Long	on	42	42	49	41	43	45	44	49
5	Sal	Long	on	39	43	38	46	42	42	46	45
6	Sal	Long	on	46	48	48	46	48	46	45	50
9	Sal	Long	on	48	45	47	48	47	50	47	48
10	Sal	Long	on	45	44	47	45	42	42	49	50
14	Sal	Long	on	42	47	50	49	45	47	48	48
16	Sal	Long	on	44	47	45	47	45	47	46	45

Chapter 4, Experiment 3b – Stimulus Generalization Experiment, CR Test first
Tolerance Test Day, with 1 or 10 day delay, all rats get ethanol

Slip Angles, Absolute Values

Subj #	Group	Delay Condition	Test Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
16	Eth	Long	Off	52	47	48	45	45	49	53	49
13	Eth	Long	Off	45	50	53	49	50	47	50	50
28	Eth	Long	Off	43	46	43	42	42	41	44	42
23	Eth	Long	Off	42	42	42	43	37	39	42	38
20	Eth	Long	Off	43	43	37	39	37	41	41	40
14	Eth	Long	Off	44	45	45	46	47	44	44	45
31	Eth	Long	Off	40	44	39	37	37	39	38	39
6	Eth	Long	Off	45	49	47	46	45	48	48	49
22	Eth	Long	On	39	40	40	34	35	34	34	38
17	Eth	Long	On	45	44	44	44	39	42	38	40
15	Eth	Long	On	49	54	56	47	44	46	48	53
1	Eth	Long	On	51	50	48	45	45	50	47	48
7	Eth	Long	On	46	51	48	52	47	48	48	48
29	Eth	Long	On	47	47	47	48	49	49	47	46
30	Eth	Long	On	43	47	44	42	46	41	44	43
4	Eth	Long	On	45	45	47	45	46	47	47	46
26	Eth	Short	Off	44	45	41	44	45	45	43	41
25	Eth	Short	Off	45	46	44	40	44	43	43	45
5	Eth	Short	Off	42	51	45	44	44	46	43	47
19	Eth	Short	Off	39	43	36	34	35	32	39	37
10	Eth	Short	Off	45	49	42	40	41	43	44	44
18	Eth	Short	Off	38	40	36	35	35	36	34	39
9	Eth	Short	Off	46	46	45	43	49	45	46	49
21	Eth	Short	On	44	49	39	39	36	40	39	43
12	Eth	Short	On	49	48	44	45	41	41	48	47
2	Eth	Short	On	44	47	40	44	38	39	41	42
3	Eth	Short	On	47	42	38	34	40	40	48	45
27	Eth	Short	On	44	45	45	39	38	37	37	40
24	Eth	Short	On	38	38	31	31	29	31	34	31
8	Eth	Short	On	47	47	45	44	41	45	44	43
1	Sal	Long	Off	40	40	41	39	39	36	40	40
4	Sal	Long	Off	44	44	37	37	38	37	36	39
5	Sal	Long	Off	40	45	34	31	36	36	39	36
6	Sal	Long	Off	44	47	45	40	45	39	39	45
9	Sal	Long	Off	45	39	42	38	35	36	36	36
10	Sal	Long	Off	42	43	37	38	38	38	40	35
14	Sal	Long	Off	48	40	37	35	40	42	34	35
16	Sal	Long	Off	43	43	38	32	34	35	37	34
2	Sal	Long	On	45	47	37	38	34	37	38	39
3	Sal	Long	On	43	48	48	47	46	47	43	47
7	Sal	Long	On	43	44	40	38	42	37	38	38
8	Sal	Long	On	42	42	34	34	30	33	40	36
11	Sal	Long	On	44	47	39	35	37	37	42	37
12	Sal	Long	On	48	47	47	45	45	42	46	45
13	Sal	Long	On	46	47	41	37	40	38	46	41
15	Sal	Long	On	47	37	36	33	31	35	38	40

Chapter 4, Experiment 3b -- Stimulus Generalization Experiment, CR Test first
 CR Test Day, with 1 or 10 day delay, all rats get saline
 Slip Angles, Absolute Values

Subj #	Group	Delay Period	Test Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
1	Eth	Long	Off	48	59	54	51	50	51	51	50
15	Eth	Long	Off	46	54	53	55	54	56	56	55
22	Eth	Long	Off	41	43	45	44	44	45	41	44
7	Eth	Long	Off	48	48	52	53	56	50	51	54
17	Eth	Long	Off	42	45	45	48	44	45	46	46
4	Eth	Long	Off	48	54	50	49	50	54	51	53
28	Eth	Long	Off	42	45	44	46	48	49	51	45
31	Eth	Long	Off	39	51	44	50	47	52	49	45
23	Eth	Long	On	43	43	42	42	46	46	42	42
20	Eth	Long	On	43	46	47	47	48	46	46	45
16	Eth	Long	On	49	45	53	56	54	54	51	50
14	Eth	Long	On	45	49	49	48	49	49	50	48
13	Eth	Long	On	49	52	51	53	57	52	54	53
6	Eth	Long	On	46	52	52	45	50	50	45	50
29	Eth	Long	On	39	42	45	48	43	46	45	45
30	Eth	Long	On	44	48	49	51	47	48	46	48
24	Eth	Short	Off	39	41	45	44	42	43	44	45
27	Eth	Short	Off	43	47	49	47	47	51	49	47
3	Eth	Short	Off	45	49	49	47	49	46	47	50
12	Eth	Short	Off	49	57	52	54	52	55	55	54
8	Eth	Short	Off	46	51	50	56	56	50	48	49
2	Eth	Short	Off	44	48	48	51	49	49	52	47
21	Eth	Short	Off	44	49	49	51	50	49	50	51
19	Eth	Short	On	39	39	39	40	42	43	44	40
25	Eth	Short	On	46	46	48	46	48	47	47	47
26	Eth	Short	On	49	48	47	49	47	47	46	46
9	Eth	Short	On	43	49	46	47	46	48	46	46
5	Eth	Short	On	42	45	42	49	44	44	44	45
10	Eth	Short	On	45	44	47	50	46	51	47	48
18	Eth	Short	On	39	43	46	40	42	45	44	44
2	Sal	Long	off	41	42	46	47	43	45	45	46
3	Sal	Long	off	43	45	42	45	42	44	45	45
7	Sal	Long	off	45	49	53	47	47	48	48	48
8	Sal	Long	off	39	43	45	45	47	43	42	46
11	Sal	Long	off	44	46	45	46	44	46	49	50
12	Sal	Long	off	44	49	44	44	47	50	48	50
13	Sal	Long	off	47	42	43	46	45	45	46	48
15	Sal	Long	off	49	49	49	50	46	48	48	50
1	Sal	Long	on	44	44	45	42	42	46	43	42
4	Sal	Long	on	42	42	49	41	43	45	44	49
5	Sal	Long	on	39	43	38	46	42	42	46	45
6	Sal	Long	on	46	48	48	46	48	46	45	50
9	Sal	Long	on	48	45	47	48	47	50	47	48
10	Sal	Long	on	45	44	47	45	42	42	49	50
14	Sal	Long	on	42	47	50	49	45	47	48	48
16	Sal	Long	on	44	47	45	47	45	47	46	45

Chapter 4, Experiment 3b – Stimulus Generalization Experiment, CR Test first
Tolerance Test Day, with 1 or 10 day delay, all rats get ethanol
Slip Angles, Absolute Values

Subj #	Group	Delay Condition	Test Stimulus	Pre-Inj	2 min	4 min	6 min	8 min	10 min	12 min	14 min
16	Eth	Long	Off	52	47	48	45	45	49	53	49
13	Eth	Long	Off	45	50	53	49	50	47	50	50
23	Eth	Long	Off	42	42	42	43	37	39	42	38
20	Eth	Long	Off	43	43	37	39	37	41	41	40
14	Eth	Long	Off	44	45	45	46	47	44	44	45
29	Eth	Long	Off	47	47	47	48	49	49	47	46
30	Eth	Long	Off	43	47	44	42	46	41	44	43
6	Eth	Long	Off	45	49	47	46	45	48	48	49
22	Eth	Long	On	39	40	40	34	35	34	34	38
17	Eth	Long	On	45	44	44	44	39	42	38	40
15	Eth	Long	On	49	54	56	47	44	46	48	53
1	Eth	Long	On	51	50	48	45	45	50	47	48
7	Eth	Long	On	46	51	48	52	47	48	48	48
31	Eth	Long	On	40	44	39	37	37	39	38	39
28	Eth	Long	On	43	46	43	42	42	41	44	42
4	Eth	Long	On	45	45	47	45	46	47	47	46
26	Eth	Short	Off	44	45	41	44	45	45	43	41
25	Eth	Short	Off	45	46	44	40	44	43	43	45
5	Eth	Short	Off	42	51	45	44	44	46	43	47
19	Eth	Short	Off	39	43	36	34	35	32	39	37
10	Eth	Short	Off	45	49	42	40	41	43	44	44
18	Eth	Short	Off	38	40	36	35	35	36	34	39
9	Eth	Short	Off	46	46	45	43	49	45	46	49
21	Eth	Short	On	44	49	39	39	36	40	39	43
12	Eth	Short	On	49	48	44	45	41	41	48	47
2	Eth	Short	On	44	47	40	44	38	39	41	42
3	Eth	Short	On	47	42	38	34	40	40	48	45
27	Eth	Short	On	44	45	45	39	38	37	37	40
24	Eth	Short	On	38	38	31	31	29	31	34	31
8	Eth	Short	On	47	47	45	44	41	45	44	43
1	Sal	Long	Off	40	40	41	39	39	36	40	40
4	Sal	Long	Off	44	44	37	37	38	37	36	39
5	Sal	Long	Off	40	45	34	31	36	36	39	36
6	Sal	Long	Off	44	47	45	40	45	39	39	45
9	Sal	Long	Off	45	39	42	38	35	36	36	36
10	Sal	Long	Off	42	43	37	38	38	38	40	35
14	Sal	Long	Off	48	40	37	35	40	42	34	35
16	Sal	Long	Off	43	43	38	32	34	35	37	34
2	Sal	Long	On	45	47	37	38	34	37	38	39
3	Sal	Long	On	43	48	48	47	46	47	43	47
7	Sal	Long	On	43	44	40	38	42	37	38	38
8	Sal	Long	On	42	42	34	34	30	33	40	36
11	Sal	Long	On	44	47	39	35	37	37	42	37
12	Sal	Long	On	48	47	47	45	45	42	46	45
13	Sal	Long	On	46	47	41	37	40	38	46	41
15	Sal	Long	On	47	37	36	33	31	35	38	40

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