1 Common Pitfalls

1.1 Adverse Reactions to Methamphetamine

1.1.1 Monitor the general behavior, appearance, activity level, and food and water consumption of all animals at least twice a day during methamphetamine self-administration.

1.1.2 If an animal exhibits a decrease in food or water intake, a decline in coat appearance (e.g. appears greasy or ungroomed) or lethargy, then do not run the rat in the operant chambers that day.

1.1.3 If a rat continues to not eat or drink after one day of rest and 15% of lost body weight is not recovered within one day, notify a veterinarian to check the health status of the rat. Employ any recommended treatment. For instance, if there is decreased food or water consumption for more than one day, then consider supplementation with more palatable food or administer fluids subcutaneously.

1.1.4 If a rat does not return to its baseline health in 2 or 3 days, despite appropriate therapy, after an adverse reaction to methamphetamine, then remove the rat from the study.

1.2 Failure to Self-Administer Methamphetamine

1.2.1 If a rat fails to self-administer methamphetamine, then consider that the animal may be afraid of the operant chamber in general, or of the levers protruding from the chamber wall.

1.2.1.1 Crush a palatable food pellet into a fine powder and place onto the active lever. Note: This food stimulus will guide the rat to press the active lever and will assist in the acquisition of methamphetamine self-administration.

1.2.1.2 Repeat the powder intervention every 10 minutes for the duration of the first session, or until the rat appears to be acquiring the desired behavior.

1.2.1.3 If a rat fails to self-administer methamphetamine despite placement of food powder on the active lever, then use an alternative strategy. Place a palatable food pellet into a small amount of tape and stick this assembly to the active lever.

1.2.1.4 Use the tape method to encourage the rat to stay on the active lever for a longer period of time while it chews through the tape to obtain the food. Note: The animal will be more likely to associate the active lever with the subsequent methamphetamine infusion.

1.2.1.5 Repeat the tape intervention every 10 minutes for the duration of the first session, or until the rat appears to be acquiring the desired behavior.

1.3 Rat Extraction Difficulty

Note: If a rat becomes aggressive and agitated by the end of the operant session due to methamphetamine intoxication, it may be difficult to safely extract the animal from the chamber.

1.3.1 Leave the rat in the darkened operant chamber for up to 30 minutes after the session has ended if needed. Once the rat’s agitation has subsided, disconnect the animal from the leash assembly and remove gently from chamber. Note: This intervention will not significantly interfere with future operant learning because the cues and rewards are not present after the end of session.

1.3.3 If the rat still cannot be removed from the chamber 30 minutes after the session, then inject methohexital sodium as described in sections 5.4.2.4 and 5.4.2.5 of the protocol text to induce a brief anesthesia to allow successful extraction. Inject the anesthetic through the plastic tubing that previously connected the fluid swivel suspended above the operant chamber to the rat’s intravenous catheter anchored to its back.