**After**consulting the answer sheet and carefully looking over your answer, if you have a disagreement or do not understand your grade, make an appointment with the person who graded the question as indicated on the answer sheet.  You will need to make a careful argument why a grade should be changed rather than ask the grader to justify the grade.  Please keep in mind that the total point total for the class is 600 points.

**Mean = 85.47, SD = 10.88**

***Questions 1, Graded by Heather Bazille (hb456)***

a. **[7 points total; 2 points for stating the relation between animal crowding research and Malthus’ theory of carrying capacity, 2 points for stating the critical, methodological characteristics of the animal research, and 3 points for stating the results of the animal research and why the results refute Malthus’ theory of carrying capacity]** Malthus’ theory of carrying capacity argues that population growth is regulated by resources such as food and water. When a population grows to a size where there are insufficient resources, the population crashes. Research on crowding in animals challenges this theory because in these studies populations (deer on an island, rodents in a lab) are provided all the resources needed to survive. However even with this, the population at a certain point stops growing and crashes. Both physiological data as well as observations indicate this happened because of stress related to crowding.

b. **[6 points total; 2 points per theory (1 point for explaining the theory and 1 point for providing an example of evidence consistent with the theory)]** Privacy crowding happens when there is more social interaction than desired (too much unwanted social interaction) Students in crowded dormitories report too much, unwanted social interaction. In a lab study, students from crowded housing were less likely to accept an offer of social support when needed. In India, adults in more crowded homes had less social support as well as higher levels of psychological distress. Furthermore, the diminished social support mediated the link between home density and distress.

Overstaffing [overmanning] theory argues that crowding happens when more people are available than necessary to fulfill the roles/actions necessary to maintain a setting or perform. This leads them to feel marginalized or uninvolved in activities. Students in big vs. small high schools are less satisfied, more alienated, and feel less a part of (belonging). In a lab experiment with tasks requiring different number of people to co operate in order to the task, the ratio of people to number required predicted various negative outcomes.

Stress crowding is caused by more personal space invasions. Crowding leads to behavioral constraints or fewer options to do what one wishes to do. Under crowded living conditions as well as laboratory conditions, crowding is related to elevated biomarkers of stress. In more crowded settings people feel less mastery or sense of control over the setting.

c. **[7 points total; 3 points for generating data that would undermine the theory and 4 points for explaining the logic of you answer]** **Part c. is supposed to be original. No two answers should be same. Similar logic is ok but identical not ok.** The logic to complete this portion relies upon generating some hypothetical data salient to one of the above explanations (too much unwanted social interaction; too many people to fulfill the roles needed to operate a setting/perform a task; data showing either personal space invasion or lack of control. Since the question says data to undermine the theory, there are a couple of different possibilities. One is to show that with changes in density, some measure of the theoretical mechanism is unaffected. Alternatively show the mechanism is affected as predicted but no negative outcome as a result.

d. **[5 points total; see point breakdown below]** **Part d as above c. needs to be original.**

The guideline needs to have:

i. **[1 point]** a succinct statement about using a design feature shown to attenuate adverse crowding effects. These include partitions, depth, more light and/or windows, smaller residential complex (e.g. single-family dwelling vs. multifamily). Room shape where longer from entry compared to wider or more volume such as higher ceilings.

ii. **[1 point]** define crowding

iii. **[1 point]** rationale for the guideline pointing to some research findings about one of the above design elements and crowding

iv. **[1 point]** social identity that might interact (moderate) the design guideline or explanation why universal with everyone likely impacted similarly

v. **[1 point]** drawing to illustrate a design response

***Questions 2, Graded by Gary Evans (gwe1)***

1. a. auditory effects of noise either permanent or temporary hearing loss. Research showing that workers in noisy environments have more hearing loss. People living in modern, economically developed societies show hearing loss with aging. Little or no hearing loss with aging in preindustrial, primarily agricultural societies. Temporary hearing loss in musicians or concert attendees immediately following a performance.

Sleep disturbance. In hospitals evidence of sleep disturbance in relation to exposure to noise.

People proximate to airports take more sleep meds and report more sleep disturbance. Lab study with simulated airport noise showed changes in brain activity indicative of sleep disturbance **2 points**

Nonauditory effects of noise reading deficits in children various studies showing adverse impacts of transportation noise on children in schools near airports, roads, train tracks.  
 factory work textile mill where worker productivity compared with and without hearing protection

complex task performance laboratory study showing that while doing a complex task such as a dual task, deficits occur in secondary task. Note:no credit if didn’t specify complex explicitly or did not use a complex task description.

Some people included motivation or task persistence or helplessness as part of performance whereas others included as a separate category. Either is fine. Research examples: children chronically exposed to noise evidence less task persistence. Following short period of noise exposure in the laboratory while working on tasks, aftereffects (residual) impacts include lower task persistence.   
Physiological stress (blood pressure, cortisol, catecholamines) elevated among workers in noisy factories over time; children attending schools in high noise impact zones such as airport flight paths have elevated biomarkers of chronic stress.

Annoyance persons living proximate to noise sources express annoyance, dissatisfaction with noise. Research on annoyance and sound levels from transportation sources. **2 points**

b. cognitive children chronically exposed to noise have reading deficits. Some candidate mechanisms include: learning to tune out/filter/ignore the noise but this also includes not paying attention to speech. Speech perception is impaired which is a building block of reading. Study of children in airport building over a busy highway in NYC. Lower floors have worse reading scores and more problems with speech perception.

Teachers in noisy schools report that students are more distracted. Observations show the same thing. Teachers in airport vs. nonairport proximate schools. A parallel mechanism is that teachers themselves in these settings also show difference in job stress, fatigue, etc.

Lost teaching time in noisy schools. Study of school with elevated train tracks on one wide of school found lower reading scores. These classrooms had an 11% reduction in teaching time.

Evidence that noise can diminish motivation. Both lab and field studies show less task persistence in children exposed to noise. **4 pts**   
 social aggression is accentuated in noise as long as you are primed to feel more hostile/angry. Film of a violent vs. a peaceful move. Then put in lab and asked to use shock to punish someone learning a task. More shock following noise + violent movie. No effect if peaceful movie. Parallel results but instead of movie witness violence vs. none. Insult the participant vs. neutral interaction.

Altruism people less altruistic when exposed to noise. Lawn mower study person is walking on sidewalk with nearby lawnmower off or on. Person gets out of car and drops books. Less helping under noise condition. The hypothetical explanation/mechanism is that you do not notice or recognize they need help. This was shown in the lawn mower study because in half the conditions the person dropping their books had a cast on their arm. Under quiet conditions this increased helping behavior. Under the noise condition it had no effect. **4 pts**

c. i. Cost of coping means that some of the adverse effects of environmental stressors may be caused by the manner in which people cope with the stressor. Similarly the costs of adaptation refers to the fact that although human beings reap the benefits of having considerable ability to adapt or learn to live with adverse environmental conditions, this also means that we are able/willing to continue living under circumstances that are not good for our health.

**2 pts**

Thus you cope with noise by tuning out auditory stimuli but this has the unintended consequence (side effect) of producing speech perception deficits. On the one hand this coping enables us to function and tolerate the high noise environment but on the other it leads to some adverse consequences.

**Ignore i. on exam. It is redundant with above.**

**Part ii. For C supposed to be original. Similar answers are fine but same is not ok.**

ii. Noise Quiet

Boys 30% 90%

Girls 50% 90%

% speech perception ability

Noise is associated with speech deficits but the impacts are worse for boys (3:1) than for girls (1.8:1). This shows a person x environment interaction for the tuning out mechanism since speech perception is harmed more by noise for boys than for girls.

**6 pts 3 for the data and 3 for the explanation**

**-1 if data show env x person interaction but not for mechanism, instead for the outcome. For instance several people showed a person x environment interaction for reading rather than for tuning out, speech perception problems, lost teaching time, diminished motivation.**

**-6 if person x environment interaction only included the environmental dimension or only included the person dimension. As indicated in class and on prelim one, have to include both to demonstrate the interaction.**

d. annoyance increases with noise levels (loudness, sound levels, decibels)

this relation is nonlinear with higher levels of noise having a greater impact  
 the relation between noise levels and annoyance are stronger for air traffic than road or rail

**2 pts**

Fear is greater for aircraft which would increase annoyance.   
 Malfeasance on part of authorities would lead people to be more annoyed when noise is loud enough.

Similar arguments for activities interfered with.

Sound qualities such as pitch, or intermittent vs continuous noise.

Airplanes more visible and prominent when seeing them vs. road or rail which blend in more with surroundings.

**3 pts**

***Questions 3, Graded by JeeEun Lee (jl3738)***

a. **[ 2 points for each of three examples: 2 points x 3 examples = 6 points ]** Persons living under modern conditions have higher levels of stress because of the demands of modern life that are different from those we evolved in as a species. Adults living in London have increasing levels of blood pressure as they age whereas adults in Botswana have relatively stable levels with aging.

Similar pattern for bp among women who live in a cloistered convent in France in comparison to women aging who live in French society.

Patterns of disease for Americans in 1900 vs. today show marked increases in stress-related diseases.

Persons infected with common cold virus or placebo under quarantine conditions. Persons who develop a cold have had more stressful life events in past month.

Japanese American men who immigrated to Hawaii who adopted more American/Westernized values (particularly individualism vs. collectivism) were more likely to have high cholesterol and CHD.

b. **[ 3 points if the alternative explanation is reasonable ]**

London vs. Botswana could be ethnic/cultural background since primarily Caucasian vs. African. Diet, exercise, smoking

Nun study diet, exercise, smoking, no contact with men

Disease patterns antibiotics, diet, exercise

Japanese American men with more Westernized beliefs and values may have also made other changes in diet, exercise, smoking, etc.

c. **[ 3 points if correctly stated Milgram’s argument: The answer should include ‘adapt’ or ‘cope with’ related to social interactions OR behavioral alteration or changes to avoid the overload of social stimulus; not sufficient if you said just different and didn’t specify the difference between people in urban and rural; not sufficient if you said just living in urban is stressful ]** Milgram argues that as a consequence of adapting to the chronic overload found in cities, urbanites develop various coping mechanisms to reduce overload. Unfortunately these coping mechanisms have unintended consequences that lead urban vs. rural persons to have different social interaction behaviors/styles.

**[ 2 points for Mechanism + 2 points for examples of behavior = 4 points ]**

Less time to social inputs city > rural walking speed, eye contact

Less time to lower priority inputs rural > city altruistic behavior such as helping needy

Block inputs prior to entry city>rural use of doormen and other devices such as unlisted phone numbers to make it harder to interact

Shift the social burden to others city>rural exact change in order to use services

Create special institutions to remove social burdens city > rural soup kitchens, housing for homeless, emergency shelters, etc.

d. **part d. supposed to be original. Similar answers ok but should not be same.**

**[ 3 points for experiment design + 3 points for correct data + 3 points for explanation why this data contradicts Milgram’s argument = 9 points ]**

**\*\*\* The experiment should look at the relationship between acute and chronic exposure by setting them as independent variables (e.g., 2 x 2 experiments). If you failed to design such experiment but had something similar, you’re lost 4 points, out of 6 points ( 3 points of experiment design + 3 points for correct data ).**

Need to set up a table or a graph with some aspect of exposure to sensory or social overload at two or more levels. Then cross this with urban vs. rural individuals. Alternatively look at rural migrant to urban area: recent arrival vs. long term.

Then show that the reaction to the overload is similar for urban vs. rural or that the urban experienced persons respond more strongly to the overload.

Acute Noise Acute Quiet

Urban 25% 90%

Rural 25% 90%

**\*\*\* Even when your experiment design and data are not correct, you can still earn 3 points by stating why the experiment is not supporting Milgram’s.**

Persons who adapt using the less time to lower priority inputs tend to ignore strangers in need of help. In this table, ignoring others under noise vs. quiet is similar regardless of whether you are from urban or rural background. This contradicts Milgram since the long term urbanite should ignore people at similarly high levels, regardless of current noise exposure.

***Questions 4, Graded by Gary Evans (gwe1)***

a. The growing epidemic of obesity is of major concern world-wide. The traditional response to this problem is to reduce personal choices about caloric intake and physical activity. Describe two design/planning interventions: 1. one to reduce caloric intake, and 2. one design/planning intervention to increase exercise. Provide one research finding that supports each intervention. Please explain your answers.

b. Too much of modern life leads to social isolation. Take a space on campus that you would redesign to foster more social interaction and community. Provide three design/planning changes you would make to enhance this space. Provide one research finding that supports each of your ideas.

c. For either part a. or part b. would your interventions be equally effective for low-income and high-income individuals? [ok to have a mix, design A would affect them similarly; whereas design B would work better for wealthier individuals]. Please explain why, in light of what is known about environmental justice.

**Answers and grading rubric**

a. 8 points total. Each intervention 2 points and each research finding that supports each intervention worth 2 points. Two points off if you did not write research findings or just based on your own judgement. One point of if your description of research finding is not complete. See below for example:

Reduce caloric intake reduce density (increase distance to) fast food; opposite for grocery stores and other sources of healthy foods. Several studies reviewed showing that either of these factors is associated with either obesity or with consumption of (un)healthy food. Introduction of a grocery store into a food dessert increase consumption of fruits and vegetables.

Elevate physical activity high external density of retail or other interesting destinations; reduce traffic volume near residences; increase proximity to natural spaces, physical activity centers; grid pattern of roads vs. lollipop patterns so easier to walk from point A to point B. Provide walking paths/sidewalks, bikelanes etc. Several studies showed that any one of these elevated physical activity

b. 12 points total. Each design/planning 2 points and each research finding that supports each intervention worth 2 points. Answers for part b are supposed to be original. Similar answers are ok but same is not. The example below analyzes Ho plaza, but other spaces on campus are also fine, such as dorm, library, etc. Design changes or policy changes are acceptable. “Reduce elevator speed” will lose 2 points. “Build a road/walking path” will also lose 2 points. Examples of wayfinding are not acceptable.

Research findings that support intervention need to give rationale about their facilitation in social interaction. Failing of describing such rationale will lose 2 points.

They need 3 interventions.

Many people will describe Ho plaza or area right outside of the student union (Willard Strait)

Add natural elements.

The logic for research evidence will be same for all suggestions. Something along these lines: Prior work shows that trees/water are more abundant in well used outdoor spaces. Introduction of these elements improves social use of spaces.

Comfortable places to sit.

Activity generators. Interesting activities, focal points, music, entertainment, etc.

Food.

Provide protection from wind and other harsh conditions. Cover for precipitation. Heat lamps if cold; shade if too sunny.

One that does not apply to Ho plaza but is a salient quality of good public spaces is called visual prospect. Relation between space and the street/sidewalk. Can you see into the space prior to entry in order to recognize who is there and/or what people are doing.

c. 8 points total. Answering “would your interventions be equally effective for low-income and high-income individuals?” is 4 points, and describe the nature of the impact 4 points. If you only write one intervention in part a or b, 2 points will be deducted.

Issue here is person x environment interaction. Would the intervention affect all individuals in a similar manner regardless of income or would the impacts be more or less helpful for low vs. high income. Need to do this for each of the three interventions from part b. it is fine if some are examples of a person x environment interaction and some are argued to be universal.

The need to explain their reasoning as well as describe the nature of the impacts.