MINDD 3: Prediabetes and Delay Discounting

NCT number: NCT03664726

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Complete Research Protocol (HRP-503)

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Template Instructions

Sections that do not apply:

- *In several sections, the addition of checkboxes for **Not Applicable** have been added to the template as responses.*
    - *If an N/A checkbox is present, select the appropriate justification from the list.*
    - *If an N/A checkbox is not present, or if none of the existing checkboxes apply to your study, you must write in your own justification.*
- *In addition:*
    - *For research where the only study procedures are records/chart review: Sections 19, 20, 22, 23, 24, 25, 31, and 32 do not apply.*
    - *For exempt research: Sections 31 and 32 do not apply.*

Studies with multiple participant groups:

- *If this study involves multiple participant groups (e.g. parents and children), provide information in applicable sections for each participant group. Clearly label responses when they differ. For example:*

  Response:

  Intervention Group: Episodic Future Thinking (EFT)

  Control Group: Episodic Recent Thinking (ERT)

Formatting:

- *Do not remove template instructions or section headings when they do not apply to your study.*

If you are pasting information from other documents using the "Merge Formatting" Paste option will maintain the formatting of the response boxes.

Amendments:

- *When making modifications or revisions to this and other documents, use the **Track Changes** function in Microsoft Word.*
- *Update the version date or number **on Page 3.***

PROTOCOL TITLE:

Include the full protocol title.

Response:

MINDD 3: Prediabetes and Delay Discounting

PRINCIPAL INVESTIGATOR:

Name
Department
Telephone Number
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Response:

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VERSION:

Include the version date or number.

Response:

4 – VTC

07/20/2018

GRANT APPLICABILITY:

Indicate whether this protocol is funded by a grant (e.g. NIH, foundation grant). For a grant with multiple aims, indicate which aims are covered by this research proposal.

NOTE: This question does not apply to studies funded by a sponsor contract.

Include a copy of the grant proposal with your submission.

Response:

This study is Specific Aim 3 of the grant "Delay Discounting as a target for self-regulation for prediabetics" funded by NIDDK RFA-RM-14-020, "Science of

Behavior Change: Assay Development and Validation for Self-Regulation Targets (UH2/UH3)"

RESEARCH REPOSITORY:

Indicate where the research files will be kept, including when the study has been closed. The repository should include, at minimum, copies of IRB correspondence (approval, determination letters) as well as signed consent documents. This documentation should be maintained for 3 years after the study has been closed.

Response:

Location: G56 Farber Hall

Address: 3435 Main Street, UB South Campus, Buffalo, NY 14214

Department: Pediatrics

1.0 Objectives

1.1 Describe the purpose, specific aims, or objectives of this research.

Response: The proposed research will translate research on delay discounting to the prevention of Type 2 diabetes (T2D) in persons with prediabetes. In this study, we will test our ability to engage and change the target, delay discounting (DD).

1.2 State the hypotheses to be tested, if applicable.

NOTE: A hypothesis is a specific, testable prediction about what you expect to happen in your study that corresponds with your above listed objectives.

Response: We predict that poverty conditions will increase discounting of the future for ERT subjects, but those receiving EFT will show levels of DD similar to levels observed for participants in the neutral condition. We also predict that EFT will activate brain regions associated with delay of gratification and prospection, and improve executive functions related to EFT, such as working memory.

2.0 Scientific Endpoints

2.1 Describe the scientific endpoint(s), the main result or occurrence under study.

NOTE: Scientific endpoints are outcomes defined before the study begins to determine whether the objectives of the study have been met and to draw conclusions from the data. Include primary and secondary endpoints. Some example endpoints are: reduction of symptoms, improvement in quality of life, or survival. Your response should ***not*** *be a date.*

Response: The primary endpoint is the reduction of discounting of the future and increase activation in regions associated with delay of gratification and prospection.

3.0 Background

3.1 Provide the scientific or scholarly background, rationale, and significance of the research based on the existing literature and how it will contribute to existing knowledge. Describe any gaps in current knowledge. Include relevant preliminary findings or prior research by the investigator.

Response: DD has been related to several adverse health behaviors including smoking (Bickel et al., 1999) and obesity (Rollins et al., 2010). Our laboratories have extensive experience collecting information about DD and these various health outcome behaviors.

Initial research on Type 2 diabetes (T2D) using a brief monetary choice questionnaire showed T2D individuals who discount the future have worse metabolic control than those who delay gratification (Reach et al., 2011). To our knowledge, there has been no research on the effects of EFT on DD among patients with prediabetes.

Adults with greater DD is associated with obesity (Appelhans et al., 2012), and low activation of brain sites critical for self-control in DD predicts longitudinal weight gain in adults (Kishinevsky et al., 2012). Likewise, inability to delay gratification predicts greater subsequent weight gain in young children (Francis and Susman, 2009) and poorer response to evidence-based pediatric weight control programs (Seeyave et al., 2009).

In turn, the prevalence of T2D is associated with obesity (Kahn et al., 2006). Moreover, T2D (Vanhanen et al., 1997, Kanaya et al., 2004, Yaffe et al., 2004) and risk for T2D (Vanhanen et al., 1997) are associated with increased risk of executive dysfunction. This association suggests one of two possibilities: (1) diabetes causes a decline in executive function, or (2) inadequate executive function contributes to obesity and then diabetes. In either case, the relationship between executive function and both obesity and diabetes can present challenges in adhering to behavioral and medical therapies (Smith et al., 2011, Primožič et al., 2012). Poor planning, low working memory, cognitive inflexibility, poor attention to detail in combination with excessive DD can lead to weight gain and poor metabolic outcomes.

Research supports Episodic Future Thinking (EFT), self-projection into the future to pre-experience an event (Atance & O'Neill, 2001), as an effective approach to reduce bias towards immediate gratification (Daniel & Epstein, 2013; Daniel, Stanton, & Epstein, 2013). However, little is known about EFT's effect in individuals at risk for Type 2 Diabetes. Understanding the effect of EFT in prediabetics can be efficacious in translating this technique into an efficacious health intervention.

3.2 Include complete citations or references.

Response:

Allison, DB, Kalinsky, LB, & Gorman, BS (1992). A comparison of the psychometric properties of three measures of dietary restraint. Psychological Assessment, 4(3), 391.

Appelhans BM, Waring ME, Schneider KL, Pagoto SL, DeBiasse MA, Whited MC, Lynch EB (2012). Delay discounting and intake of ready-to-eat and away-from-home foods in overweight and obese women. Appetite, 59:576-584.

Atance CM, O'Neill DK (2001). Episodic future thinking. Trends in Cognitive Sciences, 5, 533-539.

Bickel WK, Odum AL, Madden GJ (1999). Impulsivity and cigarette smoking: Delay discounting in current, never, and ex-smokers. Psychopharmacology (Berl), 146:447-454.

Bonato DP, Boland FJ (1983). Delay of gratification in obese children. Addictive Behaviors, 8:71-74.

Bourget V, White DR (1984). Performance of overweight and normal-weight girls on delay of gratification tasks. International Journal of Eating Disorders, 3:63-71.

Daniel TO, Epstein LH. (2013). The future is now: Comparing the effect of episodic future thinking on impulsivity in lean and obese individuals. Appetite, 71, 120-125.

Daniel TO, Stanton CM, Epstein LH. (2013). The future is now: Reducing impulsivity and energy intake using episodic future thinking. Psychological Science, 24, 2339-2342.

Davis C, Patte K, Curtis C, Reid C. (2010). Immediate pleasures and future consequences. A neuropsychological study of binge eating and obesity. Appetite, 54, 208-213.

Francis LA, Susman EJ (2009). Self-regulation and rapid weight gain in children from age 3 to 12 years. Archives of pediatrics & adolescent medicine, 163:297-302.

Graziano PA, Bagner DM, Waxmonsky JG, Reid A, McNamara JP, Geffken GR (2012). Co-occurring weight problems among children with attention deficit/hyperactivity disorder: the role of executive functioning. Int J Obes (Lond), 36:567-572.

Group DPPR (2003). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. Obstetrical & Gynecological Survey, 58:182-183.

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dependent outpatients. Experimental and clinical psychopharmacology, 7(4), 412.

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Kahn SE, Hull RL, Utzschneider KM (2006). Mechanisms linking obesity to insulin resistance and type 2 diabetes. Nature, 444, 840-846.

Karlsson, J, Persson, LO, Sjöström, L, Sullivan, M (2000). Psychometric properties and factor structure of the Three-Factor Eating Questionnaire (TFEQ) in obese men and women. Results from the Swedish Obese Subjects (SOS) study. International Journal of Obesity & Related Metabolic Disorders, 24(12).

Kishinevsky FI, Cox JE, Murdaugh DL, Stoeckel LE, Cook EW, Weller RE (2012). fMRI reactivity on a delay discounting task predicts weight gain in obese women. Appetite, 58:582-592.

Kuczmarski RJ, Ogden CL, Guo S, Grummer-Strawn LM, Flegal KM, Mei Z, Wei R, Curtin LR, Roche AF, Johnson CL (eds.) (2002) CDC growth charts for the United States: Methods and development. Hyattsville, MD: National Center for Health Statistics.

Peters, J, Büchel, C (2010). Episodic future thinking reduces reward delay discounting through an enhancement of prefrontal-mediotemporal interactions. Neuron, 66(1), 138-148.

Picone, Sloan, Taylor (2004). Effects of risk and time preference and expected longevity on demand for medical tests. Journal of Risk and Uncertainty, 28, 39-53.

Primožič S, Avbelj M, Dernovšek MZ, Oblak MR (2012). Specific cognitive abilities are associated with diabetes self-management behavior among patients with type 2 diabetes. Diabetes research and clinical practice, 95:48-54.

Reach G, Michault A, Bihan H, Paulino C, Cohen R, Le Clésiau H (2011). Patients' impatience is an independent determinant of poor diabetes control. Diabetes & metabolism, 37:497-504.

Rendell, P.G., & Craik, F. I. M. (2000). Virtual and Actual Week: Age-related differences in prospective memory. Applied Cognitive Psychology. Special Issue: New Perspectives in Prospective Memory. 14, S43-S62.

Rollins BY, Dearing KK, Epstein LH (2010). Delay discounting moderates the effect of food reinforcement on energy intake among non-obese women. Appetite, 55:420-425.

Sanders AF, Lamers JM (2002). The Eriksen flanker effect revisited. Acta psychologica, 109:41-56.

Seeyave DM, Coleman S, Appugliese D, Corwyn RF, Bradley RH, Davidson NS, Kaciroti N, Lumeng JC (2009). Ability to delay gratification at age 4 years and risk of overweight at age 11 years. Archives of Pediatric and Adolescent Medicine, 163:303-308.

Shallice T (1982). Specific impairments of planning. Philosophical transactions of the Royal Society of London Series B, Biological sciences, 298:199-209.

Shellock, FG, Kanal, E (1996). Magnetic resonance: bioeffects, safety, and patient management. Lippincott Williams & Wilkins.

Smith E, Hay P, Campbell L, Trollor J (2011). A review of the association between obesity and cognitive function across the lifespan: implications for novel approaches to prevention and treatment. Obesity Reviews, 12:740-755.

Strathman A, Gleicher F, Boninger DS, Edwards CS (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. Journal of Personality and Social Psychology, 66:742.

Stunkard, AJ, & Messick, S (1985). The three-factor eating questionnaire to measure dietary restraint, disinhibition and hunger. Journal of psychosomatic research, 29(1), 71-83.

Tombaugh TN (2004). Trail Making Test A and B: normative data stratified by age and education. Archives of clinical neuropsychology: the official journal of the National Academy of Neuropsychologists, 19:203-214.

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Watson D., Clark LA, Tellegen A. (1988) Development and Validation of Brief Measures of Positive and Negative Affect: The PANAS Scales. Journal of Personality and Social Psychology, 52 (6), 1063-1070.

Yaffe K, Blackwell T, Kanaya A, Davidowitz N, Barrett-Connor E, Krueger K (2004). Diabetes, impaired fasting glucose, and development of cognitive impairment in older women. Neurology, 63:658-663.

4.0 Study Design

4.1 Describe and explain the study design (e.g. case-control, cross-sectional, ethnographic, experimental, interventional, longitudinal, observational).

Response: This study is an experimental between-subjects design; subjects in the behavioral arm will be randomized to poverty/neutral scenarios crossed with EFT/ERT in a 2 x 2 factorial design. Subjects in the fMRI arm will be randomized to one of two groups: episodic future thinking (EFT) versus episodic recent thinking (ERT) control.

5.0 Local Number of Subjects

5.1 Indicate the total number of subjects that will be enrolled or records that will be reviewed locally.

Response: Up to 100-150 subjects will be enrolled (up to 250 nationally) with 50-75 enrolled in each arm of the study. In addition, a small sample (approximately 4-6 subjects) will be assigned to be pilot participants to help with quality assurance and data validity procedures. Participants will be informed if they are a pilot participant at the time of consent.

5.2 If applicable, indicate how many subjects you expect to screen to reach your target sample (i.e. your screen failure rate).

Response: We expect to screen approximately 250 subjects to reach our target sample with about a 40% attrition expected based on the screen fail rate and a 50% MRI ineligible rate from the previous two studies, MINDD 1 (Aim 1) and MINDD 2 (Aim 2).

5.3 Justify the feasibility of recruiting the proposed number of eligible subjects within the anticipated recruitment period. For example, how many potential subjects do you have access to? What percentage of those potential subjects do you need to recruit?

Response: The Division of Behavioral Medicine has access to a password protected database that has been approved for use by previous IRB committees (385420, 389912, 385442030-796526, STUDY00000936). This is a large database of people interested in participating in future studies. Research staff has extensive experience using the database for recruitment purposes and we feel confident that we can recruit the required number of subjects from this database and through our community based efforts. In addition, physicians will refer people from their clinics that may be interested in participating.

6.0 Inclusion and Exclusion Criteria

*6.1 Describe the criteria that define who will be **included** in your final study sample.*

NOTE: This may be done in bullet point fashion.

Response: Adults: Participants must be 18 years of age or older to participate.

Prediabetes: Participants must have a diagnosis of prediabetes within the last 2 years or meet criteria for prediabetes or meet criteria for prediabetes during screening for the study. The American Diabetes Association guidelines (Group, 2003) defines prediabetes as Fasting Plasma Glucose

(FPG) 100-125 mg/dl, 2h glucose 140-199 mg/dl after Oral Glucose Tolerance Test (OGTT), or hemoglobin A1c (HbA1c) approximately 5.7-6.4%.

*6.2 Describe the criteria that define who will be **excluded** from your final study sample.*

NOTE: This may be done in bullet point fashion.

Response: Type 2 Diabetes: Individuals will be excluded if they have Type 2 Diabetes.

Pregnancy: Women who are pregnant or lactating will be excluded from participation.

Substance use, abuse, or dependence: Individuals that currently have problems with substance dependence, addiction, or problematic substance use that would limit participation (e.g., binge drinkers, alcoholics, daily recreational stimulant/opiate users) will be excluded.

Conditions that affect adherence: Participants should not have a condition that would limit participation which include medical conditions that would affect individuals' ability to use the computer for prolonged period of time; leave the individual unable to ambulate; or current diagnoses of an eating disorder (anorexia, bulimia,), unmanaged psychiatric disorder (depression, anxiety, attention deficit hyperactivity disorder (ADHD), schizophrenia), or an intellectual impairment that would impact study adherence.

Abnormal glucose related to medications: Participants should not be taking medications that would limit participation and cause abnormal glucose levels (e.g. atypical antipsychotic medications or glucocorticoids) including diabetic drugs such as Metformin.

Unwilling or unable to eat study food: Participants who are unwilling or not able to eat the study food (a PowerBar) will not be able to take part in this study.

Prior participation in similar studies: Individuals who have recently participated in a laboratory study using similar methods may also be excluded.

Anyone who cannot have an MRI (e.g. anyone who has any type of metallic implant in his/her body, including pacemakers, aneurysm clips, shrapnel, metal fragments, orthopedic pins, screws or plates, IUD's or piercings that cannot be removed) will not be able to participate in the imaging portion of the study (3b). Those who cannot have an MRI may be eligible to participate in the behavioral version of the study.

Do not meet discounting criteria: Individuals who do not meet discounting criteria (e.g. nonsystematic discounting) on a delay discounting task may be excluded.

6.3 Indicate specifically whether you will include any of the following special populations in your study using the checkboxes below.

NOTE: Members of special populations may not be targeted for enrollment in your study unless you indicate this in your inclusion criteria.

Response: Individuals who are not yet adults, adults unable to consent, pregnant women, and prisoners will be excluded from this study.

☐ Adults unable to consent

☐ Individuals who are not yet adults (infants, children, teenagers)

☐ Pregnant women

☐ Prisoners

6.4 Indicate whether you will include non-English speaking individuals in your study. ***Provide justification if you will exclude non-English speaking individuals.***

In order to meet one of the primary ethical principles of equitable selection of subjects, non-English speaking individuals may ***not*** *be routinely excluded from research as a matter of convenience.*

In cases where the research is of therapeutic intent or is designed to investigate areas that would necessarily require certain populations who may not speak English, the researcher is required to make efforts to recruit and include non-English speaking individuals. However, there are studies in which it would be reasonable to limit subjects to those who speak English. Some examples include pilot studies, small unfunded studies with validated instruments not available in other languages, studies with numerous questionnaires, and some non-therapeutic studies which offer no direct benefit.

Response:

This study will not include non-English speaking participants. Since all the materials in this study will be in English, and the validated measurements are not provided in other languages, we will be excluding individuals who do not speak English.

7.0 Vulnerable Populations

If the research involves special populations that are considered vulnerable, ***describe the safeguards included to protect their rights and welfare.***

NOTE: You should refer to the appropriate checklists, referenced below, to ensure you have provided adequate detail regarding safeguards and protections. You do not, however, need to provide these checklists to the IRB.

7.1 For research that involves ***pregnant women,*** *safeguards include:*
NOTE CHECKLIST: Pregnant Women (HRP-412)

Response:

☒ **N/A**: This research does not involve pregnant women.

*7.2 For research that involves **neonates of uncertain viability or non-viable neonates,** safeguards include:*
NOTE CHECKLISTS: Non-Viable Neonates (HRP-413), or Neonates of Uncertain Viability (HRP-414)

Response:

☒ **N/A:** This research does not involve non-viable neonates or neonates of uncertain viability.

*7.3 For research that involves **prisoners**, safeguards include:*
NOTE CHECKLIST: Prisoners (HRP-415)

Response:

☒ **N/A:** This research does not involve prisoners.

*7.4 For research that involves **persons who have not attained the legal age for consent to treatments or procedures involved in the research ("children")**, safeguards include:*
NOTE CHECKLIST: Children (HRP-416)

Response:

☒ **N/A:** This research does not involve persons who have not attained the legal age for consent to treatments or procedures ("children").

*7.5 For research that involves **cognitively impaired adults**, safeguards include:*
NOTE CHECKLIST: Cognitively Impaired Adults (HRP-417)

Response:

☒ **N/A:** This research does not involve cognitively impaired adults.

*7.6 Consider if other specifically targeted populations such as students, employees of a specific firm, or educationally or economically disadvantaged persons are vulnerable. **Provide information regarding their safeguards and protections, including safeguards to eliminate coercion or undue influence.***

Response: N/A

8.0 Eligibility Screening

*8.1 Describe **screening procedures** for determining subjects' eligibility. Screening refers to determining if prospective participants meet inclusion and exclusion criteria.*

Include all relevant screening documents with your submission (e.g. screening protocol, script, questionnaire).

Response:

Interested participants will have the opportunity to complete an initial screening by phone, online, or paper upon their preference to determine if they meet the inclusion criteria as previously described. See attached supporting documents “Phone Screening Script” and “MINDD 3 Prescreen Paper Copy” for questions used on phone screens, online screens, and paper screens. Information about the study will be provided and consent will be obtained to prescreen for eligibility purposes.

During the prescreen, along with other screening questionnaires participants will also complete the PHQ-2, a shorter version of the PHQ-9, which measures current (within the past two weeks) feelings of depression or loss of interest in activities. Those that score a 3 or above on the PHQ-2, will be contacted for follow-up via phone by a trained research staff member and be given the remainder of the PHQ-9. The PHQ-9 is a validated measure that looks not only at feelings of depression and associated symptoms, but also assesses for thoughts of self-harm. Given the concern for having a participant indicate thoughts of self-harm, this procedure would allow for a real-time conversation with that participant to monitor responses and also provide them with appropriate resources. Additionally, if the participant appears to be extremely upset and/or emotional, we may ask them to fill out Columbia Severity Index, a reliable measure of assessing suicide risk.

After completing the prescreen survey, responses will be reviewed by research staff to assess eligibility and determine which arm of the study they will be eligible for (e.g. those who do not have a history of hypertension and/or hyperlipidemia but may safely participate in an MRI may be entered into the fMRI arm of this study. And those who meet all other eligibility criteria but cannot safely participate in an MRI may be entered into the behavioral part of this study). Participants will be called, emailed, or mailed a letter (depending on their preferred method of contact provided in the prescreen survey) regarding their eligibility. Those who are eligible will be scheduled to come into our lab for an in person screening visit (session 1).

At the in person screening visit (session 1) documented consent will be obtained from potential participants. During the screening procedure, participants may be asked to sign a medical release form allowing the primary care physician to provide us with the information regarding eligibility and also allow us to send any pertinent medical information to their primary care physician (e.g., diagnoses of obesity, prediabetes, hypertension, dyslipidemia, fMRI findings, depression score assessed by the BDI). If we do not receive the form within about 5 business days we will call to follow up with the primary care physician. At the screening visit, participants will have their HbA1c levels measured by finger stick to obtain a drop of blood. If subjects meet study eligibility criterion based on

HbA1c levels (5.4% - 6.7%) at the initial screening visit, they may be eligible to participate regardless of confirmatory PCP diagnosis.

Additionally at the first visit, female participants who have been entered into the fMRI arm of the study will provide us with a urine sample to check for pregnancy status. If the results are positive the participant will be informed and they will not be eligible to continue with study.

Study personnel will inform participants that this information will be used to communicate with them about study eligibility and that this information will be kept confidential and not shared with anyone outside of the study team.

The information assessed during screening is recorded in a secure database that requires a password to enter. The database is used by all members of the Division of Behavioral Medicine and has been approved for use by previous IRB committees. Information is retained in the database only if the subject gives consent.

☐ **N/A:** There is no screening as part of this protocol.

9.0 Recruitment Methods

☐ **N/A:** This is a records review only, and subjects will not be recruited. NOTE: If you select this option, please make sure that all records review procedures and inclusion/exclusion screening are adequately described in other sections.

9.1 Describe when, where, and how potential subjects will be recruited.

NOTE: Recruitment refers to how you are identifying potential participants and introducing them to the study. Include specific methods you will use (e.g. searching charts for specific ICD code numbers, Research Participant Groups, posted advertisements, etc.).

Response:

Participants will be recruited through recruitment materials (e.g., flyers, letters, and handouts/postcards), and web-based recruitment (e.g., departmental website, Facebook, Twitter, Craigslist, ResearchMatch, ClinicalTrials) disseminated through the local community, university campuses, and medical clinics including UB-MD, the university physician network, Urban Family Practice, and the Upstate New York Practice Based Research Network which is engaged in multiple research projects to improve patient care in Western New York. Used in previous IRB approved studies (030-796526, STUDY 00000936), the physicians from UBMD have provided us with a list of patient names, addresses, contact information, and brief medical history (e.g., diagnosis of hypertension, diagnosis of hyperlipidemia, previous HbA1c measurements, BMI) for recruitment purposes of the MINDD Grant. These patients may be mailed a letter that has been jointly signed from the study team and their

physician. Included in the mailing are postcards with return address and that have been pre-stamped, so that these potential participants have the option to send back a reply regarding their interest in the study via postal mail Interested patients may contact the research team. Potential participants who were mailed a letter jointly signed by the study team and the patient's physician from UB-MD may also be contacted by the study team by phone to assess interest if the study team has not received a response from the individual after one week.

Potential participants who were mailed a letter jointly signed by the study team and patient's physician at Urban Family Practice may also be contacted by the study team by phone to assess interest if the study team has not received a response from the individual after one week. Since this is the first time we will be using Urban Family Practice to recruit from, we will follow their recruitment protocol, which allows us to contact and follow up with potential participants in this manner.

We may also use the i2b2 database through UB's Institute for Healthcare Informatics (IHI) to recruit participants from the UBMD medical data base. A letter will be sent to the eligible patient's physician (see attached). After one week, if the physician doesn't contact the research team to refuse, a recruitment letter will be sent to participants via mail (see attached). If we don't hear from the patients within one week, one follow-up call will be made (see attached phone script). If at any point the physician or the patient declines, the patient will be removed from the contact list.

Additionally, a database of participants that have been involved in previous studies at the University at Buffalo Behavioral Medicine laboratory that expressed interest in future studies will be used. Participants who have indicated interest in contact for future studies will be contacted by email or phone with the study advertisement and survey link. The database is used by all approved members of the Division of Behavioral Medicine and has been approved by previous IRB Committees, for phone/email contact (385420, 389912, 385442). No data or identifying information is collected prior to a potential participant's expression of interest in the research study.

9.2 Describe how you will protect the privacy interests of prospective subjects during the recruitment process.

NOTE: Privacy refers to an individual's right to control access to him or herself.

Response:

Individuals who contact the research team after viewing the above recruitment materials disseminated at local sites control their own privacy interests.

Individuals that have previously indicated interest and willingness to be contacted for participating in future studies will be contacted and thus can control their own participation. All individuals will be informed that participation is voluntary and they can withdraw from participation at any time. The study team will cease contact with any individuals that they have learned are not interested.

The privacy of patients recruited using the i2b2 data will be protected by following the UB IRB-approved procedure.

9.3 Identify any materials that will be used to recruit subjects.

NOTE: Examples include scripts for telephone calls, in person announcements / presentations, email invitations.

For advertisements, include the final copy of printed advertisements with your submission. When advertisements are taped for broadcast, attach the final audio/video tape. NOTE: You may submit the wording of the advertisement prior to taping to ensure there will be no IRB-required revisions, provided the IRB also reviews and approves the final version.

Response:

Web-based advertisements posted on the departmental website, Facebook, Twitter, Craigslist, ResearchMatch, ClinicalTrials, flyers, handouts, telephone calls, using the approved script, and mailed letters and postcards, will be used to recruit subjects.

10.0 Procedures Involved

*10.1 Provide a description of **all research procedures or activities** being performed and when they are performed once a subject is screened and determined to be eligible. Provide as much detail as possible.*

NOTE: This should serve as a blueprint for your study and include enough detail so that another investigator could pick up your protocol and replicate the research. For studies that have multiple or complex visits or procedures, consider the addition of a schedule of events table in in your response.

Response:

Behavioral Arm: Upon arrival to the Division of Behavioral Medicine (G56 Farber Hall), participants will be greeted and escorted to a private interview room where they will be given a verbal explanation about the study and provide documented consent. Two copies of the consent form will be signed by all parties involved, person obtaining consent and the participant. One copy will be obtained by study personnel and one copy will be given to participants for their records. After signing the consent forms, participants will have their blood glucose measured. Participants will then consume a PowerBar and begin completing study related tasks in which they will have their HbA1c, blood pressure, height and weight measured to calculate BMI, and complete measures of delay discounting and study questionnaires including demographics, consumption, alcohol, tobacco substance use, time perspective, and prospective memory. Measures and questionnaires may be completed on either the computer or paper/pencil labelled only with the participant's ID number. About 30-45 minutes after consuming the PowerBar participants will have their blood glucose measured again. In addition, participants will sign forms for release of their relevant medical records to confirm their eligibility (e.g., diagnosis with prediabetes, hypertension and/or hyperlipidemia, MRI

eligibility). Participants will be given a choice as to whether they would like their screening results shared with them and/or with their physician. If participants have values at a certain critical level (e.g. critically high blood pressure) they may be automatically notified. Participants may also complete a urine drug screen to confirm non-substance abuse and female participants may complete a urine pregnancy test to ensure eligibility.

After completing all study tasks, questionnaires, measures etc. for the first session, participants may have their blood glucose measured again. Blood glucose will be measured up to 3 separate times during this visit. The first visit is expected to last between two to two and a half hours.

If eligible, participants will be scheduled for an additional session to be completed within the next four weeks. The second session will last approximately two to two and a half hours. Participants may be asked to abstain from eating or drinking (except water) for approximately 2 hours prior to both of their sessions and engaging in any activity that may influence appetite. Participants who are not about 2 hours post prandial or have experienced a major life event that may influence their performance on study measures and tasks may have their appointment rescheduled. As in the first visit, participants will have their blood glucose measured and then offered a PowerBar to consume prior to completing all study related tasks. In this visit, participants will again have blood glucose measured three separate times (e.g. beginning of session, about 30-45 minutes after consuming PowerBar, and at the end of the session).

Participants will be randomly assigned to one of two groups, EFT or ERT, and complete an episodic thinking task. Participants will be randomized by stratifying for education level and sex. The episodic thinking task to generate episodic cues will be similar to the tasks used in our previous studies on EFT's effect (Daniel et al., 2013). Each group will list and describe events for different time periods. The episodic component of the thinking task will occur while the participants are asked to describe what they are imagining about each event (e.g., vacations, weddings, parties, and so forth). EFT participants will list positive future events they are looking forward to and list events that could happen at different general future time points (e.g., 1 month, 2-6 months, 7-12 months). In contrast, the ERT group will list positive recent events (events that have already happened) that they have enjoyed that have occurred at different general time points (e.g., a few hours ago, 1 day ago, 2-6 days ago, 7-12 days ago). All participants will rate the salience, valence, arousal, feasibility and vividness of each event and events with the highest ratings for vividness will be used in the generation of episodic cues. An "imagery" score may be calculated by averaging the frequency/vividness scores for each event. Reductions in rate of discounting occur at higher levels of episodic imagery (Peters & Buchel, 2010). Additionally, participants will record their highest rated events into audio cues.

Participants may also be instructed to use and think about their episodic cues as they engage in a set of executive function tasks (e.g., The Virtual Week) and other decision making tasks such as measures of delay discounting (e.g., discounting of money, food, sedentary behaviors/physical activity, future health; a series of single and cross commodity discounting tasks) and food preferences. Participants will be randomized to which cues (future or recent) they will be instructed to think about when engaging in The Virtual Week task. Executive function tasks may take place on a computer screen or paper and pencil. Participants will complete questionnaires regarding their attention to their episodic cues while engaged in study tasks.

fMRI Arm: If it is determined that the participant is willing and eligible to complete an fMRI they may be entered into the fMRI arm of this study. For these participants, the first visit is identical to that of the first visit in the behavioral arm of the study, with the exception that participants will not complete an episodic thinking task, and the MRI screening form may be reviewed with the participant to ensure safety and eligibility.

Eligible participants will be scheduled for an additional session to be completed within the next 30 days. The second session will last approximately an hour and a half to two hours. Participants may be asked to abstain from eating or drinking (except water) for approximately 2 hours prior to their sessions and engaging in any activity that may influence appetite. Participants who are not about 2 hours post prandial or have experienced a major life event that may influence their performance on study measures and tasks may have their appointment rescheduled. As in the first visit, participants will have their blood glucose measured and then offered a PowerBar to consume prior to completing all study related tasks. In this visit, participants will again have blood glucose measured three separate times (e.g. beginning of session, 30 minutes after consuming PowerBar, and at the end of the session).

In the second visit, female participant will again be asked to provide a urine sample to confirm non-pregnancy status. Eligible participants will be randomly assigned to one of two groups, EFT or ERT, and complete an episodic thinking task identical to the thinking task in the first visit of the behavioral study. They may also be asked to complete decision making tasks while engaged in episodic thinking and undergoing an fMRI without contrast scan at their second session. Prior to the scan, MRI safety trained personnel will assess the safety of all participants. During the fMRI scan, the participant will be given a small box with buttons to press in response to the display that appears on the screen above them within the machine. The participant will be selecting objects that they prefer in decision-making tasks. Additionally, interested participants may have the opportunity to receive a copy of their brain images.

Following their last session, all participants will be debriefed.

Pilot participants will complete identical procedures, but may complete fewer sessions and/or activities than those described above.

Participants who are considered "screen fails" for having low blood HbA1c, not within the prediabetes range (5.4-6.7%), will be logged to track our "screen fail rate" and will not be included in the final data analysis. Participants who were initially tested on the A1CNow+® system and were screened ineligible for having a blood HbA1c measurement near the prediabetes range (i.e., between 5.0 and 5.3) may be invited back to our lab for an additional HbA1c measurement using the Alere Afinion^{TM} AS100 Analyzer System. Upon retesting, if their HbA1c measure is now in the prediabetes range, they will be eligible to continue with the rest of the study and will be recorded as "initially ineligible, eligible upon retesting HbA1c", and will be included in the final data analysis.

10.2 Describe what data will be collected.

NOTE: For studies with multiple data collection points or long-term follow up, consider the addition of a schedule or table in your response.

Response:

Data consists of demographic measures, subjective preference and hunger, food questionnaires, energy intake, delay discounting, executive function, relative reinforcing efficacy, substance consumption, pregnancy, temporal perspective, blood pressure, HbA1c, blood glucose, fMRI images, and participants' heights and weights recorded during the experimental session.

10.3 List any instruments or measurement tools used to collect data (e.g. questionnaire, interview guide, validated instrument, data collection form).

Include copies of these documents with your submission.

Response:

Please see the attachment labeled, "questionnaires (M3)."

Demographics and Health Behavior: Race/ethnicity, household income, and educational level will be assessed using a survey-based questionnaire. Participants will also be asked about their health behavior, including substance use, mental health, medical history, and food consumption.

Food Consumption Questionnaire. Food consumption, including any food or beverages ingested in the last 10-12 hours.

Major Life Events: Individuals will be asked to complete the major life events questionnaire which measures major life events that may have been experienced during their involvement in the study. Individuals who are undergoing major life events such as a move, new baby or a new job may influence their performance on study measures and tasks.

Financial Planning and Longevity. Individual differences in time period of financial planning will be assessed with the question, "In planning your, or your family's, saving and spending, which of the time periods is more important to you and your partner, if you have one?" (Picone, Sloan, & Taylor, 2004). Answer choices provided will range from not planning, to planning longer than ten years. Financial planning will be reported categorically, and will be converted to a continuous variable for analysis using midpoints of the categories. Subjective probability of living to age 75 will be measured by asking "What do you think are the chances you will live to be 75 or more (where 0 means there is no chance you will live to 75 or more, and 100 means you will definitely live to 75 or more)?" (Picone et al., 2004). Higher values on either question will indicate greater future orientation.

Time Perspective: Individual differences in temporal perspective will be assessed using measures that assess temporal orientation. Consideration of Future Consequences Scale (CFCS). CFCS assesses the extent to which individuals consider the potential future outcomes of their current behavior and the extent to which they are influenced by the imagined outcomes (Strathman et al., 1994).

Positive and Negative Affect Schedule (PANAS): The PANAS comprises two mood scales, one that measures positive affect and the other which measures negative affect (Watson et. al., 1988)

Height, Weight, BMI: Participants' height will be assessed using a ~~digital~~ stadiometer. Participants' weight will be assessed using a digital scale. Based on the height and weight data, Body Mass Index (BMI) will be calculated according to the following formula: BMI = kg/m^2. These are the current standards set forth by the Centers for Disease Control and Prevention (Kuczmarski et al., 2002).

Blood pressure: Blood pressure will be measured 3 times using an OMRON automated blood pressure device by trained personnel. The latter two readings will be averaged.

Hemoglobin A1c (HbA1c): HbA1c will be measured using the A1CNow+® system (PTS Diagnostics, Sunnyvale, CA) or the Alere Afinion^{TM} AS100 Analyzer System (Abbott, Abbott Park, IL).

Blood Glucose: Blood glucose will be measured using the FreeStyle Lite Glucose Monitor (Abbott, Abbott Park, IL)

Subjective Hunger: Participants will be asked to provide subjective ratings of their hunger. Hunger will be assessed using a 5-point Likert scale (anchored by 1-Extremely Full and 5-Extremely Hungry).

Subjective Preferences: Participants may be asked to provide subjective ratings of their food/activity preferences by ranking, rating their liking using a 5-point Likert scale (anchored by 1-Do not like and 5-Like very much), and making choices between their food/activity.

Same Day Food Recall: Participants will be asked if they are willing to eat the study food during a 24-hour recall questionnaire assessing past food behavior

(e.g. what time they ate their last meal, food items consumed in the past 24 hours, etc.). Those who say they are not willing to eat the study food will not be included in the study.

Cue Attention: A Likert-style scale assessing attentiveness to the episodic cues and vividness cues during tasks will be assessed on a scale from 1 to 5, where 1 indicates "not at all" and 5 indicates "very much".

Delay Discounting: An operational definition of impulsivity is delay discounting, the degree to which a person will discount the value of a larger delayed reward in favor of a smaller immediate reward. Computerized/ experimenter administered assessments will provide participants with choices between a smaller amount of a hypothetical commodity available immediately or a larger amount available later. Participants will make choices between rewards such as money, food, physical activity, and health gains. Two methods will be used to measure discounting, Adjusting Amount and Adjusting Delay.

Adjusting Amount Discounting. The magnitude of the immediate commodity is adjusted until it is subjectively equivalent to the later larger amount. Subjective equivalence will be obtained at delays such as; 1 day, 1 week, 1 month, 3 months, 6 months, and 1 year. To ensure comparison between money and non-monetary rewards, prior to running the discounting programs for food, physical activity and health, participants will indicate the amount of the commodity whose receipt "right now" would be equally valuable to the participants as receiving a set amount of money, for example $100.

Adjusting Delay Discounting. The adjusting delay discounting task is a five trial task in which participants are asked how much money they would prefer (e.g. $500) immediately or a larger reward after a delay (e.g. $1000). This task is presented on a computer screen and is designed to measure the amount of monetary discounting that occurs when rewards are presented at a delay. This task adjusts the delay to the larger reward and allows for the calculation of k-values. This task will be completed matching each of the traditional tasks parameters (i.e. type and magnitude of the reinforcer).

Executive Function: Cognitive processes, such as planning, cognitive flexibility, working memory, prospective memory, retrospective memory and attention may be measured by using computerized tasks (e.g., with Inquisit) or paper and pencil that involves solving problems, remembering a set of letters or spatial locations while alternating with a distracter tasks, responding to specific stimulus in the presence of an orienting cue, or playing the computer game "The Virtual Week" where users will plan out typical events that could actually happen during the week (e.g., taking their medication, calling their friend, picking up their dry cleaning) (Rendell, & Craik, 2000)

Relative Reinforcing Efficacy Food Purchasing Task: The food purchasing task is modified off of the cigarette purchasing task (CPT) that has been used by Jacobs and Bickel (1999) and assesses a number of different metrics of relative reinforcing efficacy. The procedure we will use is a modified version of this procedure and will assess the relative reinforcing efficacy of a range of foods via

an online survey or computerized task. The chosen food will be displayed during the task so that participants have a frame of reference when completing the questionnaire.

Neuroimaging: The MRI data will be collected during approximate 60 min sessions that will include positioning participants in the scanner, collecting T1-weighted structural scans, and conducting target fMRI experiments. Some parameters may be modified to accommodate the specifics of this multisite study. MRI scanning performed at the Dent Neurologic Institute will be performed on a Philips Ingenia 3T system (200 T/m/s slew rate). T1 weighted anatomical images will be acquired with a 3D Turbo Field Echo (TFE) sequence at 1mm isotropic resolution and scanning parameters: Shot interval = 2500ms, TR = 7.7ms, TE = 3.5ms, FA = 8 deg., BW = 191.5 Hz/2.26 pixel, and SENSE parallel imaging factor of 2.2, for an acquisition time of 5 minutes and 10 seconds. MRI scanning at Virginia Tech Carilion Research Institute or at the Virginia Tech Corporate Research Center will be performed on a Siemens 3T Tim Trio system outfitted with a 45 mT/m gradient system (200 T/m/s slew rate). T1 weighted anatomical images will be acquired with a 3D MPRAGE sequence at 1 mm isotropic resolution and scanning parameters: TI = 900 ms, TR = 2.6 s, TE = 3 ms, FA = 8°, BW = 130 Hz/pixel, and GRAPPA parallel imaging factor of 2, for an acquisition time of 4 minutes and 38 seconds. FMRI data will be acquired using a T2* weighted single-shot EPI sequence, matched across the two sites (see also section 6.6.3). Whole-brain functional volumes will be acquired in 26 3.4-mm axial slices (with a 20% slice gap), each with 3.4 mm x 3.4 mm in-plane resolution. Additional fMRI imaging parameters include: TR = 2 s, TE = 25 ms, FA = 90 deg., BW = 1953 Hz/pixel.

10.4 Describe any source records that will be used to collect data about subjects (e.g. school records, electronic medical records).

Response:

Electronic medical records will be used. These will include records from patients at UBMD, Urban Family Practice, and additional records provided through the use of i2b2.

*10.5 Indicate whether or not **individual** subject results, such as results of investigational diagnostic tests, genetic tests, or incidental findings will be shared with subjects or others (e.g., the subject's primary care physician) and if so, describe how these will be shared.*

Response:

Participants will be given a choice as to whether they would like their screening results shared with them and/or with their physician, see supporting document "Participant Physician Follow-up Form". If participants have values at a certain critical level (e.g. critically high blood pressure), express extreme feelings of depression (assessed by the Beck Depression Inventory), express suicidal thoughts, or the fMRI images reveal any areas of concern their physician will

automatically be notified by mail, fax, or phone call. Records may include height, weight, blood pressure, HbA1c, pregnancy, drug screen, and brain images.

*10.6 Indicate whether or not **study** results will be shared with subjects or others, and if so, describe how these will be shared.*

Response:

Study results will not be shared with subjects. Findings may be presented at conferences and published in scientific journals.

11.0 Study Timelines

11.1 Describe the anticipated duration needed to enroll all study subjects.

Response:

This study will complete rolling recruitment and we anticipate it will take approximately 1 year to enroll all study subjects.

11.2 Describe the duration of an individual subject's participation in the study. Include length of study visits, and overall study follow-up time.

Response:

Subjects will attend two appointments, each appointment being approximately 90-120 minutes. This is the same for both arms of the study.

11.3 Describe the estimated duration for the investigators to complete this study (i.e. all data is collected and all analyses have been completed).

Response:

This study will take approximately 2 years to complete.

12.0 Setting

12.1 Describe all facilities/sites where you will be conducting research procedures. Include a description of the security and privacy of the facilities (e.g. locked facility, limited access, privacy barriers). Facility, department, and type of room are relevant. Do not abbreviate facility names.

NOTE: Examples of acceptable response may be: "A classroom setting in the Department of Psychology equipped with a computer with relevant survey administration software," "The angiogram suite at Buffalo General Medical Center, a fully accredited tertiary care institution within New York State with badge access," or, "Community Center meeting hall."

Response:

This research will be conducted at the University at Buffalo (UB) and *Virginia Polytechnic Institute and State University* (VT) as well as their corresponding fMRI facilities. All facilities are locked and require key or badge access to enter in relevant research areas.

The UB team will conduct research at the Division of Behavioral Medicine Research Labs, located in G56, G58, G90 and 151 Farber Hall, University at Buffalo South Campus. The fMRI scans will be conducted at local fMRI facilities located at Dent Neurologic Institute (3980 Sheridan Drive, Buffalo, NY).

The VT research team will conduct research at the Virginia Tech Carilion Research Institute, in Roanoke and Blacksburg locations. The fMRI scans will also be conducted at the Virginia Tech Carilion Research Institute, also in Roanoke or Blacksburg. Recruitment and screening will be in collaboration with Carilion Clinic Department of Family and Community Medicine in Roanoke and surrounding areas.

12.2 For research conducted outside of UB and its affiliates, describe:

- *Site-specific regulations or customs affecting the research*
- *Local scientific and ethical review structure*

NOTE: This question is referring to UB affiliated research taking place outside UB, i.e. research conducted in the community, school-based research, international research, etc. It is not referring to multi-site research. UB affiliated institutions include Kaleida Health, ECMC, and Roswell Park Cancer Institute.

Response:

Dent Neurologic Institute will follow the same scientific and ethical review structure as the University at Buffalo. All research staff working on the project will need to complete Human Subjects Training as per the University requirements. Staff will be trained across sites to follow the same procedures and weekly/monthly meetings will be organized to ensure this.

☐ **N/A:** This study is not conducted outside of UB or its affiliates.

13.0 Community-Based Participatory Research

13.1 Describe involvement of the community in the design and conduct of the research.

NOTE: Community-Based Participatory Research (CBPR) is a collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community, has the aim of combining knowledge with action and achieving social change to improve health outcomes and eliminate health disparities.

Response:

☒ **N/A:** This study does not utilize CBPR.

13.2 Describe the composition and involvement of a community advisory board.

Response:

☒ **N/A:** This study does not have a community advisory board.

14.0 Resources and Qualifications

*14.1 Describe the qualifications (e.g., education, training, experience, expertise, or certifications) of the Principal Investigator **and** staff to perform the research. When applicable describe their knowledge of the local study sites, culture, and society. Provide enough information to convince the IRB that you have qualified staff for the proposed research.*

NOTE: If you specify a person by name, a change to that person will require prior approval by the IRB. If you specify a person by role (e.g., coordinator, research assistant, co-investigator, or pharmacist), a change to that person will not usually require prior approval by the IRB, provided that the person meets the qualifications described to fulfill their roles.

Response:

The Principal Investigator, Dr. Leonard H. Epstein is a Distinguished Professor of Pediatrics, and Social and Preventive Medicine at the State University of New York at Buffalo. Dr. Epstein has published over 300 papers in peer reviewed journals. The project coordinator and research staff have experience in behavioral research using similar methodology and have completed the appropriate certifications: CITI and CPR/First Aid/AED.

Describe other resources available to conduct the research.

14.2 Describe the time and effort that the Principal Investigator and research staff will devote to conducting and completing the research.

NOTE: Examples include the percentage of Full Time Equivalents (FTE), hours per week. The question will elicit whether there are appropriate resources to conduct the research.

Response:

The Principle Investigator will devote approximately 8-10 hours per week to meet with staff, oversee data safety and discuss recruitment and study specific information.

The Project Coordinator will spend approximately 40% of their time training and supervising staff, including conducting weekly project meetings, 10% completing the Human Subjects Review Process, 20% coordinating the scheduling of appointments for staff and prospective subjects, 10% coordinating and assisting in the test sessions, 10% coordinating multisite weekly meetings, and 10% overseeing the development of study materials.

Research Assistants will spend approximately 50% of their time training and running participants, 20% recruiting subjects, 20% developing project materials,

including questionnaires, surveys, and forms, and 10% entering data and quality control of the data collected during the study

14.3 Describe the availability of medical or psychological resources that subjects might need as a result of anticipated consequences of the human research, if applicable.

NOTE: One example includes: on-call availability of a counselor or psychologist for a study that screens subjects for depression.

Response:

The availability of experienced endocrinologists will be available for our study that examines subjects at risk for Type 2 Diabetes.

If a participant scores high on the PHQ-9 (greater than or equal to 10) or they respond with any answer other than "not at all" to the suicidality question, the project coordinator and PI will be notified. These participants will also be provided with a resource list (see supporting document "Resource List" with name, address, and phone number of local and national counseling resources, crisis services, and emergency services.

During any of the visits, if the participant appears to extremely upset (e.g. emotional, crying,) the project coordinator and PI will be notified. These participants will be asked to fill out the Beck Depression Inventory as well as provided with the list of resources. We will notify this participant's physician of their depression score by mail, fax, or phone call, and suggest that they follow up with their patient. Additionally, we will follow up with the participant within the next 24 hours.

14.4 Describe your process to ensure that all persons assisting with the research are adequately informed about the protocol, the research procedures, and their duties and functions.

Response:

All personnel working on the project are required to complete the CITI training as required by IRB. Additionally, there are extensive procedures manuals that are read and followed by all personnel. The Project Coordinator is responsible for training staff on data collection and recording procedures.

Project coordinator and the principal investigators will be responsible for ensuring proper staff training on study procedures and consistency of data collection between each site. This will be achieved through local training, regular communication between sites and coordinating procedural materials for experimenters.

15.0 Other Approvals

15.1 Describe any approvals that will be obtained prior to commencing the research (e.g., school, external site, funding agency, laboratory, radiation safety, or biosafety).

Response:

IRB approval for procedures taking place at Virginia Tech, DENT Neurologic Institute, and the Virginia Carilion Clinic.

☐ **N/A:** This study does not require any other approvals.

16.0 Provisions to Protect the Privacy Interests of Subjects

16.1 Describe how you will protect subjects' privacy interests during the course of this research.

NOTE: Privacy refers to an individual's right to control access to him or herself. Privacy applies to the person. Confidentiality refers to how data collected about individuals for the research will be protected by the researcher from release. Confidentiality applies to the data.

Examples of appropriate responses include: "participant only meets with a study coordinator in a classroom setting where no one can overhear", or "the participant is reminded that they are free to refuse to answer any questions that they do not feel comfortable answering."

Response:

Prospective participants may contact the laboratory of their own free will and are thus controlling access to their privacy. All data will be collected in a secure laboratory environment in password protected databases in which only study staff has access. Participants will only interact with project research staff and sessions will take place in a private laboratory room that includes a closed circuit television monitoring system that will be monitored by the experimenter to ensure participant protocol adherence and safety. Participants are reminded that they are free to refuse to answer any questions that they do not feel comfortable answering and that all information is kept confidential to the extent provided by law.

16.2 Indicate how the research team is permitted to access any sources of information about the subjects.

NOTE: Examples of appropriate responses include: school permission for review of records, consent of the subject, HIPAA waiver. This question ***does apply*** *to records reviews.*

Response:

Participants will be recruited using a secure database of interested participants maintained by the Division of Behavioral Medicine and approved for use by previous IRB committees. Potential participants will be contacted if they had indicated that they are willing to be contacted for participation in studies and thus control their own participation. A HIPAA waiver has been completed for the recruitment of participants through medical records, which is completed through the physician's office with the consent of the primary care physician. The research team may also contact primary care physicians to confirm eligibility after participants have completed consent/HIPAA/medical release forms.

17.0 Data Management and Analysis

17.1 Describe the data analysis plan, including any statistical procedures. This section applies to both quantitative and qualitative analysis.

Response:

Analytic plan is to use factorial ANCOVA to compare between group differences in different measures of DD, executive function and fMRI-measured brain function for subjects randomly assigned to poverty/neutral conditions and EFT/ERT. Covariates will be used if significant differences between groups are observed in subject characteristics. We predict a main effect of neutral/poverty, such that those assigned to poverty will have higher DD than those assigned to neutral, and an interaction between poverty/neutral and EFT such that in the poverty condition, EFT will reduce the discounting to levels achieved by the wealth, ERT subjects. We also predict when participants who receive EFT under challenge of poverty that EFT will increase activation in brain regions associated with delay of gratification (LPFC and AC) and prospection (hippocampus) relative to those who receive EFT under similar challenges.

17.2 If applicable, provide a power analysis.

NOTE: This may not apply to certain types of studies, including chart/records reviews, survey studies, or observational studies. This question is asked to elicit whether the investigator has an adequate sample size to achieve the study objectives and justify a conclusion.

Response:

The sample size is based on our studies of EFT versus ERT on DD in overweight and obese subjects, which showed an average AUC of 0.54 + 0.28, and our unpublished research that poverty simulations reduces DD by 34%. We estimate in the ERT condition, neutral simulations will lead to less discounting and higher AUC than poverty simulations (0.54 vs 0.36). We estimate in EFT conditions, that simulations of neutral are associated with a small improvement in discounting in comparison to poverty simulations (0.63 vs 0.54). These predictions suggest that DD in EFT/Poverty and ERT/Wealth will be equivalent. The effect size for this interaction is 0.35. Using the overall SD we observed of 0.28, alpha of .05 and power of 0.80, we can show the effect size for this interaction with 17 Ss/group, or 68 total, or 34 per site in the behavioral portion and in the imaging portion. To be conservative, we will study up to 100 subjects.

17.3 Describe any procedures that will be used for quality control of collected data.

Response:

The principal investigator will be responsible for ensuring data integrity and safety monitoring for human subjects who are involved in the research and communicating any negative outcomes of the data and safety monitoring plans (DSMP) reviews or any serious event or problem (SEP) that occur to the SBSIRB and other required offices/agencies. Materials will be checked to make sure that

all study data are coded with a unique participant ID. The ID will be linked only by a name through a master list kept by the project coordinator in a password-protected file.

18.0 Confidentiality

A. Confidentiality of Study Data

*Describe the local procedures for maintenance of confidentiality of **study data and any records that will be reviewed for data collection**.*

*18.1 A. Where and how will all data and records be stored? Include information about: password protection, encryption, physical controls, authorization of access, and separation of identifiers and data, as applicable. Include physical (e.g. paper) **and** electronic files.*

Response:

The i2b2 data will be protected by only accessing identifiable contact information remotely on IHI's "virtual machine", so the identifiable data never leaves their secure encrypted server. All use of identifiable data is done behind the firewall on IHI's secure system.

Potential participants who have filled out the prescreen survey will have their responses stored on a password protected server that only the research staff will have access too. Additionally, if there are paper copies of the prescreen survey responses they will be de-identified and stored in a locked filing cabinet in a locked room (252A Farber hall) which only research staff has access to.

Participants will be assigned a unique identification number to ensure the confidentiality of the data. A master list that links subject ID and participant's name will kept in a secure file that is password protected on a password protected computer. Only research staff will access to the master list. Paper files will be kept in locked lab offices at the Division of Behavioral Medicine Research Lab and electronic files will be kept on password protected computers in password protected/encrypted databases only accessible to members of the research staff. When the results of the study are presented and/or published, only group data will be provided; no individual participant will be identifiable.

18.2 A. How long will the data be stored?

Response:

Data will be retained for a period of at least three years. The master list linking the study ID with the participant name will be kept in a locked cabinet in G56 for three years after the completion of the study at which point it will be destroyed. De-identified data will be retained indefinitely.

18.3 A. Who will have access to the data?

Response:

Only the principal investigator and research staff associated with the study will have access to the data.

18.4 A. Who is responsible for receipt or transmission of the data?

Response:

The principal investigator takes primary responsibility for the data.

18.5 A. How will the data be transported?

Response:

Data will be transported in password protected/encrypted files via email. fMRI data will be uploaded from DENT to a DICOM server so that Researchers at Virginia Tech are able to analyze imaging results. All transferred data will be de-identified

B. Confidentiality of Study Specimens

*Describe the local procedures for maintenance of confidentiality of **study specimens**.*

☐ **N/A:** No specimens will be collected or analyzed in this research. *(Skip to Section 19.0)*

18.6 B. Where and how will all specimens be stored? Include information about: physical controls, authorization of access, and labeling of specimens, as applicable.

Response:

All blood and urine samples will be analyzed during or immediately after the initial screening appointment and will not be saved (i.e., stored). Data will not be banked for future use.

18.7 B. How long will the specimens be stored?

Response:

N/A, specimens will not be stored.

18.8 B. Who will have access to the specimens?

Response:

Research staff conducting appointments will have access to the specimens during or immediately after the initial screening appointment. However, specimens will not be stored.

18.9 B. Who is responsible for receipt or transmission of the specimens?

Response:

N/A, there is no receipt or transmission of the specimens.

18.10 B. How will the specimens be transported?

Response:

N/A, the specimens will not be transported.

19.0 Provisions to Monitor the Data to Ensure the Safety of Subjects

☐ **N/A:** This study is not enrolling subjects, or is limited to records review procedures only. This section does not apply.

NOTE: Minimal risk studies may be required to monitor subject safety if the research procedures include procedures that present unique risks to subjects that require monitoring. Some examples include: exercising to exertion, or instruments that elicit suicidality or substance abuse behavior. In such cases, N/A is not an acceptable response.

19.1 Describe the plan to periodically evaluate the data collected regarding both harms and benefits to determine whether subjects remain safe.

Response:

Data will be reviewed weekly and secured in Division of Behavioral Medicine Research Lab. The Principal Investigator, Leonard H. Epstein, PhD, will be responsible for ensuring data integrity and safety monitoring for human subjects who are involved in the research along with the Data Safety Officer.

19.2 Describe what data are reviewed, including safety data, untoward events, and efficacy data.

Response:

Study questionnaires and measurements that are collected by study personnel will be reviewed and monitored.

19.3 Describe any safety endpoints.

Response:

This study poses no greater than minimal risk; therefore, there are no safety endpoints.

19.4 Describe how the safety information will be collected (e.g., with case report forms, at study visits, by telephone calls with participants).

Response:

Participants will be encouraged to contact study personnel if they experience any problems or difficulties, and if any adverse events (AE) are reported, the study personnel contacted will record the AE. AE will be recorded as soon as they are reported, and the PI and study coordinator will be made aware. The study coordinator will summarize the AE in a memo; the participant will be called and the summary will be read to them to ensure that the information is accurate. The

memo will then be submitted to the University at Buffalo IRB and the PI. If the PI, or the IRB decide that further action is warranted, the PI and study coordinator will then formulate and carry out a plan to respond to the AE. The study coordinator will write a memo summarizing such actions; this memo will then be forwarded to the IRB. Safety information will be collected and reported to both the UBIRB and the Safety Officer in the time frames outlined by the UBIRB.

19.5 Describe the frequency of safety data collection.

Response:

Data will be reviewed weekly and secured in G56 and G252A Farber Hall. A weekly review of these data will be conducted by the principal investigator and project coordinator during their staff meetings with study personnel.

19.6 Describe who will review the safety data.

Response:

Serious Events and Problems (SEP) will be monitored by the principal investigator and project coordinator as well as reported to both the IRB and the Safety Officer in the timeframes outlined by the IRB.

19.7 Describe the frequency or periodicity of review of cumulative safety data.

Response:

Cumulative data will be reviewed approximately six months to a year based on the requirements of the Grant and NIH committee.

19.8 Describe the statistical tests for analyzing the safety data to determine whether harm is occurring.

Response:

N/A, there are no discontinuing criteria.

19.9 Describe any conditions that trigger an immediate suspension of the research.

Response:

N/A, there are no discontinuing criteria.

20.0 Withdrawal of Subjects

☐ **N/A:** This study is not enrolling subjects. This section does not apply.

*20.1 Describe **anticipated** circumstances under which subjects may be withdrawn from the research without their consent.*

Response:

Subjects who do not adhere to the protocol procedures and study instructions may be withdrawn from research analyses, as determined by the Principal Investigator and/or NIH Data Safety Committee. In addition to not adhering to study

instructions, possible reasons for removal include nonsystematic responding to questionnaires and HbA1c (blood sugar) levels that are not in the prediabetes range. If a participant is withdrawn from the study without their consent, they will be debriefed about the nature of the study and be compensated for the amount of time spent in the study. We may also stop an ongoing session, or end participation in the study because we have collected all the information we need.

20.2 Describe any procedures for orderly termination.

NOTE: Examples may include return of study drug, exit interview with clinician. Include whether additional follow up is recommended for safety reasons for physical or emotional health.

Response:

Participants will be debriefed about the nature of the study and the reason for their removal, if a safety concern. No additional follow-up is needed.

20.3 Describe procedures that will be followed when subjects withdraw from the research, including retention of already collected data, and partial withdrawal from procedures with continued data collection, as applicable.

Response:

Participants can withdraw from the research at any time. If participants withdraw, no further data will be collected, but any information that had been provided may be retained by the researcher and analyzed.

21.0 Risks to Subjects

21.1 List the reasonably foreseeable risks, discomforts, hazards, or inconveniences to the subjects related to their participation in the research. Consider physical, psychological, social, legal, and economic risks. Include a description of the probability, magnitude, duration, and reversibility of the risks.

NOTE: Breach of confidentiality is always a risk for identifiable subject data.

Response:

There may be some sensitivity associated from certain questions asked when filling out questionnaires or having body measurements taken and subjects might feel uncomfortable disclosing some personal information such as medical history. Subjects can refuse to answer any questions that they are not comfortable answering. Subjects will be free to withdraw from the study at any time, and their refusal to continue will not affect other medical care provided at any healthcare facility.

Participants may experience hunger due to refraining from eating before the session or possibly suffer a new allergic reaction to the PowerBar (i.e., an allergic reaction to a food to which he/she was not allergic in the past). Feelings of hunger will subside when the participant is able to eat after the session and the study food used is a common food thus researchers anticipate that participants will know if they should avoid eating them for

medical, religious, or preference reasons. In addition, only personnel certified in CPR, first aid, and AED will conduct study sessions and these individuals are trained to contact appropriate medical personnel in the event of an emergency.

Breach of confidentiality is another potential risk. The studies will occur in our facilities at the University at Buffalo and the Virginia Tech Carilion Research Institute. To protect confidentiality, we will use only ID numbers and keep all data in locked cabinets or in locked offices and password protected electronic files in password protected computers. Any data shared between sites will involve de-identified data only and files will be encrypted or password protected. These screening, monitoring, and confidentiality procedures have been in effect for more than 10 years and for more than 2,000 subjects across the various protocols employed by our group.

Participants may have a small bruised area on the finger from the pinprick site. The bruise should fade over time without treatment. If during the course of the study, a subject's blood glucose exceeds the range for prediabetes (Fasting Plasma Glucose (FPG) 100-125 mg/dl, or 2h glucose 140-199 mg/dl after Oral Glucose Tolerance Test (OGTT) or hemoglobin A1c (HbA1c) 5.7-6.4%), that subject will be directed to his or her physician or other medical care provider for further evaluation.

Participants may have their blood pressure measured. If during the course of the study, a subject's blood pressure reaches hypertensive crisis (180/110 mmHg), that subject will be directed to his or her physician or other medical care provider for further evaluation.

During the fMRI, movement or heating of metallic implants is a potential risk; subjects will thus be carefully screened to exclude individuals with metallic implants, fragments, or pacemakers. Some individuals may experience mild discomfort or anxiety in the scanner, and all subjects will be informed of this possibility prior to the study. In addition, throughout the scanning procedures, subjects will be able to communicate with the investigators via intercom, and any individual experiencing discomfort will be removed from the scanner immediately.

As noted, physical risk to subjects during fMRI recording is very low. Nevertheless, in addition to the measures to ensure the safety and comfort of subjects noted above, every effort will be made to provide information to subjects to minimize discomfort. There may be additional risks associated with scanning at 3 T compared to the conventional clinical scanners in the 1.5-2.0 T range. These include:

Effect of the static field. There is no conclusive evidence for irreversible or hazardous bioeffects to acute, short-term exposures of humans up to 2.0 T (Shellock et al., 1996). Studies have indicated some side-effects at 4.0 T, namely unusual sensations including nausea, vertigo, and metallic taste. However, there is no evidence that these effects are either irreversible or

harmful. If subjects experience unusual sensations, they will be withdrawn.

Effect of the gradient field. MRI operates by rapidly changing small additional fields, called gradients. This will induce small electrical currents in any conductor, and thus could theoretically induce mild peripheral nerve stimulation. However, this is not substantially different at higher magnetic fields as the gradients are separate from the main magnet. There is no evidence that the effect of the gradients is any different at 3 T than at 1.5 T. However, if subjects experience peripheral nerve stimulation such as tingling or twitching, they will be withdrawn.

Effect of the RF electromagnetic field. The higher magnetic field strength requires that higher RF frequency pulses be used to excite the protons in the subject's brain. The limits of RF energy that can be safely given to humans has been clearly defined by the FDA: a) The exposure to RF energy below the level of concern is an SAR of 0.4 W/kg or less over the body, and 8.0 W/kg or less spatial peak in any 1 g of tissue, and 3.2 W/kg or less averaged over the head; or b) The exposure to RF energy that is sufficient to produce a core temperature increase of 1 degree C and localized heating to no greater extent than 38 degrees C in the head, 39 degrees C in the trunk, and 40 degrees C in the extremities, except for patients with impaired systemic blood flow and/or perspiration. The scanner has a large monitor indicating the RF power level which can be limited to a specific maximum, and we will adhere to the recommendations.

There are no other risks anticipated. All personnel on the study will be CITI course certified and have completed the good research practices certification. All identifiable data will be password protected and only the research team will have access to that information. Subjects will be informed of the risks associated with the study.

21.2 Describe procedures performed to lessen the probability or magnitude of risks, including procedures being performed to monitor subjects for safety.

Response:

We have several provisions in place to ensure participants' privacy and safety is protected while the data is being collected. The lab facilities of the Division of Behavioral Medicine research laboratory consist of private interview rooms that will be used. Only the interviewer and participant will be present in the room during interviews. Data is recorded such that not even the person putting it in the file would ever be able to associate the data with the identity of the person providing it. Data and files that have been de-identified and encrypted will be shared between sites. Therefore, there is no reasonable risk of a breach of confidentiality. Only personnel certified in CPR, first aid, and AED will conduct study sessions and these individuals are trained to contact appropriate medical personnel in the case of a serious event. Should an emergency situation occur, access to further

medical care is available via a telephone located in the laboratory and the following emergency plan will be followed:

1. Have the subject immediately stop any activity and lay down.

2. Call for help! ON CAMPUS EMERGENCY (716-645-2222) or POLICE (911).

3. If the subject is unconscious – assess breathing and heart rate. Initiate CPR and call on campus emergency services or police as necessary.

4. If the subject is conscious – continue to observe subject.

*21.3 If applicable, indicate **which procedures** may have risks to the subjects that are currently unforeseeable.*

Response:

N/A, subjects will be allowed to refuse to answer any questions they are not comfortable with.

21.4 If applicable, indicate which research procedures may have risks to an embryo or fetus should the subject be or become pregnant.

Response:

MRI scans are not recommended for pregnant individuals. We will offer urine pregnancy test for females at the beginning and throughout the study. We will notify females of positive pregnancy test results and discontinue them from the study.

21.5 If applicable, describe risks to others who are not subjects.

Response:

N/A, no foreseeable risks to others who are not subjects.

22.0 Potential Benefits to Subjects

22.1 Describe the potential benefits that individual subjects may experience by taking part in the research. Include the probability, magnitude, and duration of the potential benefits. Indicate if there is no direct benefit.

*NOTE: Compensation **cannot** be stated as a benefit.*

Response:

There are no direct benefits from participating in this study. Participants may learn about the experimental research process and their health.

23.0 Compensation for Research-Related Injury

☒ **N/A:** The research procedures for this study do not present risk of research related injury (e.g. survey studies, records review studies). This section does not apply.

23.1 ***If the research procedures carry a risk of research related injury,*** *describe the available compensation to subjects in the event that such injury should occur.*

Response:

23.2 Provide a copy of contract language, if any, relevant to compensation for research related injury.

NOTE: If the contract is not yet approved at the time of this submission, submit the current version here. If the contract is later approved with ***different language regarding research related injury****, you must modify your response here and submit an amendment to the IRB for review and approval.*

Response:

24.0 Economic Burden to Subjects

24.1 Describe any costs that subjects may be responsible for because of participation in the research.

NOTE: Some examples include transportation or parking.

Response:

Subjects are not responsible for any costs because of participation in the research. Transportation or parking fees will be reimbursed.

☐ **N/A:** This study is not enrolling subjects, or is limited to records review procedures only. This section does not apply.

25.0 Compensation for Participation

25.1 Describe the amount and timing of any compensation to subjects, including monetary, course credit, or gift card compensation.

Response:

For participants in either arms of the study they will receive up to $140 for completing the experimental study in the form of a reloadable debit card. Participants in the behavioral arm of this study will receive $40 for completing session 1, $50 for completing session 2, and a $50 completion bonus. Participants in the MRI arm of this study will receive $40 for completing session 1, $50 for completing session 2, and a $35 completion bonus. Additionally participants who are MRI scanned will have the opportunity to receive an MRI scanning bonus of $15 for remaining still and awake while inside the scanner. This bonus should encourage participants to help optimize the quality of the scans. Incomplete sessions will be paid on a prorated basis. Reimbursement may be offered for the cost of transportation (i.e. bus, taxi fare). Additionally, to encourage attending fMRI appointments on time, due to the high cost of fMRI reservations and technicians, we will offer on-time participants an opportunity to participate in a

lottery for $0, $1, $5 and $10 prizes. Payments will be made after each completed session. If a participant was considered ineligible based on HbA1c measurements using the A1CNow+® system, and came back to our lab for an additional HbA1c measurement using the Alere AfinionTM AS100 Analyzer System, they will be compensated an additional $15.

☐ **N/A:** This study is not enrolling subjects, or is limited to records review procedures only. This section does not apply.

☐ **N/A:** There is no compensation for participation. This section does not apply.

26.0 Consent Process

26.1 Indicate whether you will be obtaining consent.

NOTE: This does not refer to consent documentation, but rather whether you will be obtaining permission from subjects to participate in a research study. Consent documentation is addressed in Section 27.0.

☒ ***Yes*** *(If yes, Provide responses to each question in this Section)*
☐ ***No*** *(If no, Skip to Section 27.0)*

26.2 Describe where the consent process will take place. Include steps to maximize subjects' privacy.

Response:

Interested participants will be screened over the phone or have an opportunity to complete the survey online. Consent to screen for eligibility will be obtained verbally over the phone or through an action (e.g. clicking an "I agree" button) online. Screening consent will be obtained prior to asking any contact or eligibility questions. Documented informed consent will be obtained in a private room at the Division of Behavioral Medicine Research Lab during the scheduled laboratory appointment. For participants who are invited back to our lab for a second screening test using the Alere AfinionTM AS100 Analyzer System, they will sign a new consent document. This document will identical to the original one they signed, with the exception that it will provide information about why they are being invited back and that they will receive additional compensation.

26.3 Describe how you will ensure that subjects are provided with a sufficient period of time to consider taking part in the research study.

NOTE: It is always a requirement that a prospective subject is given sufficient time to have their questions answered and consider their participation. See "SOP: Informed Consent Process for Research (HRP-090)" Sections 5.5 and 5.6.

Response:

There will not be a significant interval of time between obtaining and documenting consent and the actual participation in the initial research procedures (i.e. shortly after the person signs the document they will begin research procedures at their scheduled convenience). However, if a subject requests more

time to review the consent form, they are able to take the consent home to review and discuss with family members, then schedule a visit at a later date.

26.4 Describe any process to ensure ongoing consent, defined as a subject's willingness to continue participation for the duration of the research study.

Response:

The MRI screening information will be reviewed prior to each scan. Participants will be asked about any changes since screening. Participants will be reminded to remove all metal and MRI operators will screen accordingly. Participants will also be reminded that they can notify experimenters of any extreme discomfort at any point during the scan (by a squeeze ball held throughout all scans). Experimenters will also communicate with participants between scans/tasks to ensure comfort and safety.

26.5 Indicate whether you will be following "SOP: Informed Consent Process for Research (HRP-090)." If not, or if there are any exceptions or additional details to what is covered in the SOP, describe:

- *The role of the individuals listed in the application who are involved in the consent process*
- *The time that will be devoted to the consent discussion*
- *Steps that will be taken to minimize the possibility of coercion or undue influence*
- *Steps that will be taken to ensure the subjects' understanding*

Response:

☒ We have reviewed and will be following "SOP: Informed Consent Process for Research (HRP-090)."

Non-English Speaking Subjects

☒ **N/A:** This study will not enroll Non-English speaking subjects. *(Skip to Section 26.8)*

26.6 Indicate which language(s) other than English are likely to be spoken/understood by your prospective study population or their legally authorized representatives.

NOTE: The response to this Section should correspond with your response to Section 6.4 of this protocol.

Response:

26.7 If subjects who do not speak English will be enrolled, describe the process to ensure that the oral and written information provided to those subjects

will be in that language. Indicate the language that will be used by those obtaining consent.

NOTE: Guidance is provided on "SOP: Informed Consent Process for Research (HRP-090)."

Response:

Cognitively Impaired Adults

☒ **N/A**: This study will not enroll cognitively impaired adults.
(Skip to Section 26.9)

26.8 Describe the process to determine whether an individual is capable of consent.

Response:

Adults Unable to Consent

☒ **N/A**: This study will not enroll adults unable to consent.
(*Skip to Section 26.13)*

When a person is not capable of consent due to cognitive impairment, a legally authorized representative should be used to provide consent (Sections 26.9 and 26.10) ***and, where possible, assent of the individual should also be solicited*** *(Sections 26.11 and 26.12).*

26.9 Describe how you will identify a Legally Authorized Representative (LAR). Indicate that you have reviewed the "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)" for research in New York State.

NOTE: Examples of acceptable response includes: verifying the electronic medical record to determine if an LAR is recorded.

Response:

☐ We have reviewed and will be following "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)."

26.10 ***For research conducted outside of New York State****, provide information that describes which individuals are authorized under applicable law to consent on behalf of a prospective subject to their participation in the research. One method of obtaining this information is to have a legal counsel or authority review your protocol along with the definition of*

"legally authorized representative" in "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)."

Response:

*26.11 Describe the process for **assent of the adults**:*

- *Indicate whether assent will be obtained from all, some, or none of the subjects. If some, indicate which adults will be required to assent and which will not.*

Response:

- *If assent will not be obtained from some or all subjects, provide an explanation of why not.*

Response:

*26.12 Describe whether **assent of the adult** subjects will be documented and the process to document assent.*

NOTE: The IRB allows the person obtaining assent to document assent on the consent document using the "Template Consent Document (HRP-502)" Signature Block for Assent of Adults who are Legally Unable to Consent.

Response:

Subjects who are not yet Adults (Infants, Children, and Teenagers)

☒ **N/A**: This study will not enroll subjects who are not yet adults. *(Skip to Section 27.0)*

*26.13 Describe the criteria that will be used to determine **whether a prospective subject has not attained the legal age for consent to treatments or procedures involved in the research** under the applicable law of the jurisdiction in which the research will be conducted **(e.g., individuals under the age of 18 years)**. For research conducted in NYS, review "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)" to be aware of which individuals in the state meet the definition of "children."*

NOTE: Examples of acceptable responses include: verification via electronic medical record, driver's license or state-issued ID, screening questionnaire.

Response: Age of potential participants will be assessed using medical records and/or our screening questionnaire.

26.14 ***For research conducted outside of New York State****, provide information that describes which persons have not attained the legal age for consent to treatments or procedures involved the research, under the applicable law of the jurisdiction in which research will be conducted. One method of obtaining this information is to have a legal counsel or authority review your protocol along the definition of "children" in "SOP: Legally Authorized Representatives, Children, and Guardians (HRP-013)."*

Response:

26.15 Describe whether parental permission will be obtained from:

Response:

☐ One parent even if the other parent is alive, known, competent, reasonably available, and shares legal responsibility for the care and custody of the child.

☐ Both parents unless one parent is deceased, unknown, incompetent, or not reasonably available, or when only one parent has legal responsibility for the care and custody of the child.

☐ Parent permission will not be obtained. A waiver of parent permission is being requested.

NOTE: The requirement for parent permission is a protocol-specific determination made by the IRB based on the risk level of the research. For guidance, review the "CHECKLIST: Children (HRP-416)."

26.16 Describe whether permission will be obtained from individuals ***other than parents****, and if so, who will be allowed to provide permission. Describe your procedure for determining an individual's authority to consent to the child's general medical care.*

Response:

26.17 Indicate whether assent will be obtained from all, some, or none of the ***children****. If assent will be obtained from some children, indicate which children will be required to assent.*

Response:

26.18 When assent of children is obtained, describe how it will be documented.

Response:

27.0 Waiver or Alteration of Consent Process

Consent will not be obtained, required information will not be disclosed, or the research involves deception.

☒ **N/A:** A waiver or alteration of consent is not being requested.

27.1 If the research involves a waiver or alteration of the consent process, please review the "CHECKLIST: Waiver or Alteration of Consent Process (HRP-410)" to ensure that you have provided sufficient information for the IRB to make the determination that a waiver or alteration can be granted.

NOTE: For records review studies, the first set of criteria on the "CHECKLIST: Waiver or Alteration of Consent Process (HRP-410)" applies.

Response:

27.2 If the research involves a waiver of the consent process for planned emergency research, please review the "CHECKLIST: Waiver of Consent for Emergency Research (HRP-419)" to ensure you have provided sufficient information for the IRB to make these determinations. Provide any additional information necessary here:

Response:

N/A, this research does not involve a waiver for planned emergency research.

28.0 Process to Document Consent

☐ **N/A:** A Waiver of Consent is being requested.
(Skip to Section 29.0)

28.1 Indicate whether you will be following "SOP: Written Documentation of Consent (HRP-091)." If not or if there are any exceptions, describe whether and how consent of the subject will be obtained including whether or not it will be documented in writing.

NOTE: If your research presents no more than minimal risk of harm to subjects and involves no procedures for which written documentation of consent is normally required outside of the research context, the IRB will generally waive the requirement to obtain written documentation of consent. This is sometimes referred to as 'verbal consent.' Review "CHECKLIST: Waiver of Written Documentation of Consent (HRP-411)" to ensure that you have provided sufficient information.

If you will document consent in writing, attach a consent document with your submission. You may use "TEMPLATE CONSENT DOCUMENT (HRP-502)". If you will obtain consent, but not document consent in writing, attach the script of the information to be provided orally or in writing (i.e. consent script or Information Sheet).

Response:

☒ We will be following "SOP: Written Documentation of Consent" (HRP-091).

29.0 Multi-Site Research (Multisite/Multicenter Only)

☐ **N/A:** This study is not an investigator-initiated multi-site study. This section does not apply.

*29.1 If this is a multi-site study **where you are the lead investigator**, describe the processes to ensure communication among sites, such as:*

- *All sites have the most current version of the IRB documents, including the protocol, consent document, and HIPAA authorization.*
- *All required approvals have been obtained at each site (including approval by the site's IRB of record).*
- *All modifications have been communicated to sites, and approved (including approval by the site's IRB of record) before the modification is implemented.*
- *All engaged participating sites will safeguard data as required by local information security policies.*
- *All local site investigators conduct the study appropriately.*
- *All non-compliance with the study protocol or applicable requirements will be reported in accordance with local policy.*

Response:

Principal Investigator. Leonard H. Epstein, PhD, at the University at Buffalo will be responsible for the oversight of subject issues and coordination of experimental behavioral medicine approaches. Warren K. Bickel, PhD, at Virginia Tech will be responsible for management related to behavioral task data collection and analyses and will coordinate functional aspect of the fMRI component. Each PI will be responsible for recruitment at their site, communication with each other and their team, and for his own fiscal and research administration.

Communication Process. Project coordinator, study staff and/or the PIs will have a local weekly meeting to discuss any current issues with the study, including, but not limited to; IRB approvals, procedures, staff training, data safety, and interim analyses. PI and/or project coordinator will schedule monthly conference calls to discuss study information. Monthly reports/meetings will be used to track recruitment, data, data quality control, interim analyses and any IRB concerns. The agendas and reports will be saved and filed at both locations. The PIs will communicate as needed, either by phone, e-mail, or in person, to discuss experimental design, data analysis, and all administrative responsibilities. Each PI will share their respective research results with the other PI, key personnel, and collaborators.

IRB approval records. UB's IRB will be the IRB of record for both sites. UB will have records IRB approval for both sites. This will include copies of consents, protocols, questionnaires, and any other IRB-related document. Amendments and modifications will be discussed in weekly conference call meetings and implemented through UB's IRB as required.

Data Safety & Sharing/Transfer. Any and all potential safety concerns will be reported both to the IRB and additional site in a timely manner. We will follow the outlined procedures based on UB's IRB New Information Reporting form. Any adverse event will be communicated to both sites within 24 hours to inform. UB will report new information to the IRB.

Procedures. The two research groups will work collaboratively to implement research methods across the sites, and will develop common training procedures for the delay discounting, episodic future thinking, neuroimaging, and prediabetes components of the study. Members of each research team will be responsible for development of relevant manuals of operation for study methods. These will be communicated in regular email and phone meetings, as well as face-to-face meetings where investigators will travel to the other University for training and quality control issues. Team members are used to this approach since they have been involved in multi- center basic science and clinical projects. Each site will be responsible for data quality control, based on a common protocol, and quality control will be implemented after data sets are built prior to analysis.

29.2 Describe the method for communicating to engaged participating sites:

- *Problems*
- *Interim results*
- *Study closure*

Response:

Problems. Problems will be reported within 24 hours for adverse events and within 1 week for any methodological problems to both study coordinators. Study coordinators and PI's will be responsible for reporting adverse events to each IRB within the UB IRB Reporting form time frame (i.e. 5 days for new information that impacts participant risk). Study coordinators and PI's will be responsible for determining amendments required for changes to study protocol.

Interim results. Data will be shared between sites and all data will be de-identified prior to sending a password-protected/encrypted file. Study coordinators and PI's will be responsible for communicating any interim results that are analyzed.

Closure. All continuing review and closure forms will be shared between sites in an IRB related file.

29.3 Indicate the total number of subjects that will be enrolled or records that will be reviewed across all sites.

Response:

Up to 250.

29.4 If this is a multicenter study for which UB will serve as the IRB of record, and subjects will be recruited by methods not under the control of the local site (e.g., call centers, national advertisements) describe those methods.

Response:

This is a multicenter study for which UB will serve as the IRB of record. The additional study sites, Virginia Tech and their Carilion clinic, will make use of flyers, brochures, and local recruitment mailings on the Virginia tech campus and surrounding areas along with community web based advertisements. Recruitment and screening will also be in collaboration with Carilion Clinic Department of Family and Community Medicine in Roanoke and surrounding areas.

30.0 Banking Data or Specimens for Future Use

☒ **N/A:** This study is not banking data or specimens for future use or research outside the scope of the present protocol. This section does not apply.

*30.1 If data or specimens will be banked (stored) for **future use, that is, use or research outside of the scope of the present protocol**, describe where the data/specimens will be stored, how long they will be stored, how the data/specimens will be accessed, and who will have access to the data/specimens.*

NOTE: Your response here must be consistent with your response at the "What happens if I say yes, I want to be in this research?" Section of the Template Consent Document (HRP-502).

Response:

30.2 List the data to be stored or associated with each specimen.

Response:

30.3 Describe the procedures to release banked data or specimens for future uses, including: the process to request a release, approvals required for release, who can obtain data or specimens, and the data to be provided with specimens.

Response:

31.0 Drugs or Devices

☐ **N/A:** This study does not involve drugs or devices. This section does not apply.

31.1 If the research involves drugs or devices, list and describe all drugs and devices used in the research, the purpose of their use, and their regulatory approval status.

Response:

MRI scanner will be used for data collection.

31.2 Describe your plans to store, handle, and administer those drugs or devices so that they will be used only on subjects and be used only by authorized investigators.

Response:

IRB approved study team members at DENT Neurologic Institute who are MRI safety trained and experienced in neuroimaging research will store, handle, and administer the MRI.

If the drug is investigational (has an IND) or the device has an IDE or a claim of abbreviated IDE (non-significant risk device), include the following information:

31.3 Identify the holder of the IND/IDE/Abbreviated IDE.

Response:

N/A, this study does not involve IND/IDE/Abbreviated IDE.

31.4 Explain procedures followed to comply with FDA sponsor requirements for the following:

	Applicable to:		
FDA Regulation	***IND Studies***	***IDE studies***	***Abbreviated IDE studies***
21 CFR 11	***X***	***X***	
21 CFR 54	***X***	***X***	
21 CFR 210	***X***		
21 CFR 211	***X***		
21 CFR 312	***X***		
21 CFR 812		***X***	***X***
21 CFR 820		***X***	

Response:

32.0 Humanitarian Use Devices

☒ **N/A:** This study does not involve humanitarian use devices. This does not apply.

32.1 For Humanitarian Use Device (HUD) uses provide a description of the device, a summary of how you propose to use the device, including a description

of any screening procedures, the HUD procedure, and any patient follow-up visits, tests or procedures.

Response:

32.2 For HUD uses provide a description of how the patient will be informed of the potential risks and benefits of the HUD and any procedures associated with its use.

Response: