Visualizing the Group Attachment Based Intervention Study

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Introduction

It has been estimated that 1 in 4 children experience some form of child maltreatment during their lifetimes (Center for Disease Control and Prevention). One fourth of those abuse and maltreatment cases occur to children under 3 years of age. John Bowlby's theory of attachment explains the crucial period of early childhood as one of the most significant time's in an individual's development and the necessity of developing securely attached relationships during that time. Bowlby contends that children are born biologically pre-programmed to form attachments with others, in order to maximize their likelihood of survival (Bowlby, 81). This work was deeply influenced by Korad Lorenz's ethological research in 1935 focused on the process of 'imprinting' (Lorenz, 83). Bowlby's evolution rooted theory serves as the foundation for the a current research initiative known as the Group Attachment Based Intervention (GABI) study, focused on reducing and preventing child maltreatment in the United States and beyond.

The Group Attachment Based Intervention (GABI) study originated by aiding families in the South Bronx, the poorest congressional district in the United States where the poverty rate is 36.9% and the severe poverty rate is 16.9% (U.S. Census Bureau, 2010). Tackling the oppressively large issue of child maltreatment in the some of the most severely troubled neighborhoods in the country is not a straightforward task, though it is one many groups have worked towards solving. This specific initiative, the Group Attachment Based Intervention study was developed jointly by The New School for Social Research's Center for Attachment and the Albert Einstein College of Medicine's Center for Babies, Toddlers and Families in 2006.

The program targets vulnerable families at high risk of child abuse by addressing the two most toxic causes of abuse (which they define as): poor parental impulse control and parental social isolation. Instead

of removing children from the care of their biological parents, the work attempts to provide parents with the necessary tools to develop securely attached relationships to their children, and thus limit the number of adverse childhood experiences (ACEs) they will experience. These experiences are ranked on a numerical scale for both children and parents when entering the group attachment study. Though such experiences can never be erased, the goal of this work is to flat line these rankings and prevent further ACEs from occurring in their futures. By guiding these vulnerable parents, often caught in cyclical situations of abusive social environments since their own upbringing, the study is able to break the maltreatment pattern for the next generation.

Like most psychological data sets, the information being collected in this study is not being widely processed into tangible visualizations that could be examined by greater audiences. Despite the obvious importance of this work and the potential benefits it can have if the results are made widely accessible, there are limitations to the way these findings are presented beyond the immediate stakeholders within the program's operation and the close-knit psychological attachment research community. By rendering the data collected here into humanist centered visual representations it is likely, if not certain, that newfound patterns will be observed.

1.1 Goals and history of the Group Attachment Based Intervention

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"Social support is a biological necessity -- not an option, and this notion should be the backbone of all prevention and treatment." - Bessel van der Kolk, Commentary: *The devastating effects of ignoring child maltreatment in psychiatr*y -- a commentary on Teicher and Samson 2016, p270 Journal of Child Psychology and Psychiatry Volume 57.

The Group Attachment Based Intervention (GABI) was created on the notion that child maltreatment not only impacts the mental health of the individuals affected but also the physical health. Prior studies have demonstrated a direct correlation between abuse, maltreatment and household dysfunction experienced during childhood and lifetime negative physical health outcomes. Individuals exposed to four or more childhood traumas before the age of 18 have increased risks of chronic pulmonary lung disease by 390%, hepatitis by 240%, depression by 460% and suicide by 1,220%. Despite evidence that intervening early to prevent child abuse significantly boosts health outcomes, current treatment-as-usual interventions have major limitations.

Researchers from The New School for Social Research's Center for Attachment and clinicians at the Albert Einstein College of Medicine's Center for Babies, Toddlers and Families, came together in 2006 to create the Group Attachment Based Intervention (GABI) as an effort to tackle the limitations of current treatment options for low-income families in New York City. GABI was designed to focus on treating young, biological parents and their children between the ages of newborn to 3 years old, based on John Bowlby's attachment model underlying the significance of early childhood as a vital developmental period. The prolonged, severe, and/or unpredictable stress of maltreatment during this time in a child's life is known to alter physiological pathways and brain structures that can have an ongoing detrimental impact. Children under three years of age make up one-fourth of all documented cases of children suffering abuse or neglect. With the aim of training a more skilled workforce competent to address the health needs of New York's most vulnerable children under three years of age, funding from the New York State Health Foundation has allowed GABI to launch a Learning Collaborative consisting of several sites across New York State. With a "train-the-trainer" approach (involving in-person group trainings, online and teleconference work, and personalized site visits) the group has been able to educate clinicians about the correlation between childhood maltreatment and lifetime health consequences.

Additionally, this Learning Collaborative model allows researchers to test the feasibility of replicating GABI in varied clinical settings, beyond the original pilot groups at Einstein Hospital. However the platforms this training model currently exists on do not consider human centered design methods and involve watching several hours on ongoing footage without interaction or pause.

Throughout the project, the group has been collected a range of data related to the health of the families they are working with primarily using the Adverse Childhood Experience scale and Coding Interactive Behaviors (CIB) scale. These scales guide the correlations observed over the course of the treatments when comparing the GABI treatment with a generic parent training intervention known as STEP, currently the most popular treatment recommended by judges in the New York City area.

1.2 Visualizing the Group Attachment Based Intervention

The effects of visualizing both individual components and the holistic effects of trauma based data and research can be exponentially beneficial for both internal and external stakeholders. This project addresses three primary groups of stakeholders through the production of visualizations and web based platforms to improve the experience of all audiences interacting with the Group Attachment Based Intervention Study and the data surrounding it. These stakeholder groups can be understood as: the insights audience, which includes researchers and clinicians currently delivering the intervention, as well as the greater mental health community and all external individuals interested in the findings being generated by the GABI study; the action audience, which includes social workers and communities of potential trainees looking to adopt the study and learn how to successfully deliver it; and the impact audience, who are the families themselves that have engaged with and merited from the treatment.

These three audience groups can be translated into three iterations of the project that relate to an overall improvement and human centered approach to delivering this study.

Design of each tier:

1.   Insights Audience – interactive parallax visualization website, built using d3.js to illustrate various segments of the data collected by GABI so far, specifically examining the Adverse Childhood Experience (ACE) scale and Coding Interactive Behaviors (CIB) scale.

2.   Action Audience – effort to improve udemy website and method of sharing videos to help trainees understand and deliver the treatment

3.   Impact Audience – an analog form of improving the experience had by families treated in the study (i.e. taking family photographs each week, texting parents on regular basis -- setting up an automated service, building relationship with children's schools and teachers – extending the reach of the study?)

Through the production of visualizations and platforms developed for these three groups of stakeholders, there can also be three sets of benefits reaped through the results. A focus on maintaining a humanistic approach when handling the data as well as presenting it using highly human centered interface design, are hugely important components in the project. The current scalability and greater success of this study is being hindered by lack of a functional online learning platform that can train new employees to deliver the treatment.

In order to develop and improve the current online learning platform the group is using, it is important to understand the overall climate of online learning. What are the known limitations of this medium and how can we design to overcome them. What are the needs of GABI training programs and how much

interactivity can be implemented in the current model, which involves only videos and zero interaction with users. This section of the paper will address the research of online learning as a Segway into improving the needs of the GABI group specifically through a stronger platform.

This aspect of the paper will also address my visualization project itself and explain the processes, research and progress that led me to the final stage that will exist by May 2016. It will then discuss future goals for the work and plans to continue the relationship with Anne Murphy and the members of this study in order to help them improve and scale this treatment.

I will breakdown all the quantitative variables being collected and how these numeric values can work to weave a story of each family in the study. This aspect of the project relates to the insights visualization designed to aid researchers in viewing correlations, regressions and patterns in the work that could become much more accessible when shown in a visual and interactive format superior to the SPSS files they currently rely on to share this information through scholarly papers, articles and grant applications.

These papers and grants are the terminal point for much of the sharing of this work and data as that has been accepted as the norm within the greater psychological community. That is for research to live only in static files and formats presented at conferences every so often and shared as scholarly documents but never beyond that. My belief and goals are to implement the use of technology and design to share the important work being conducted, data being collected and unique discoveries being made within the greater psychological attachment community and beyond.