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**Positive Emotions Coping on Stress and Burnout Prevention: A Pilot Trial of an
Emotional Expression Game Intervention**

**TESIS para obtener el GRADO de
DOCTOR EN BIENESTAR SOCIAL**

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Resumen

Antecedentes: La Organización Mundial de la Salud (2020) afirma que el estrés crónico y el agotamiento emocional o *burnout* son dos epidemias que afectan la salud ocupacional. Un estudio global realizado durante la pandemia del Coronavirus nos muestra un incremento considerable en la prevalencia de los trabajadores a experimentar las emociones negativas asociadas a la fatiga laboral y al *burnout* (Gallup, 2021). A pesar del impacto alarmante del estrés crónico y la fatiga en los ambientes laborales, aún existen vacíos explicativos para entender las causas sistémicas, y comprender cómo diseñar estrategias para prevenir el agotamiento emocional, antecedente del *burnout*. Estos vacíos no solo constituyen una preocupación meramente académica, requieren una atención inmediata para una efectiva praxis clínica. **Propósito:** El objetivo de esta tesis es atender los vacíos de la literatura sobre el estrés y el agotamiento, bajo un enfoque en intervenciones con evidencias científicas. La tesis está conformada por tres artículos, uno conceptual y dos estudios empíricos enfocados en estudiantes internacionales de postgrado, una población continuamente afectada por el estrés y agotamiento. **Diseño:** *El primer artículo es un análisis de caso (n=6) que explora las experiencias de estudiantes internacionales de doctorado durante el confinamiento derivado de la primera ola de la pandemia del Coronavirus durante marzo-abril del 2020. En este estudio se documentan las estrategias de afrontamiento y los recursos que resultaron efectivos para mitigar el estrés. En el segundo artículo, describimos a detalle una novedosa intervención enfocada en salud mental y bienestar. Este artículo presenta los fundamentos filosóficos, científicos, y un marco teórico y conceptual útil para describir, explicar, evaluar y depurar los componentes de una intervención*

presentada como un juego de mesa llamado *Animalia*, un juego de expresión emocional, diseñado para cambiar la perspectiva de los participantes mediante la deconstrucción y la regulación de emociones restrictivas y no placenteras asociadas al agotamiento. Los participantes mediante el juego y el afrontamiento apreciativo transforman sus adversidades, y al hacerlo surgen en ellos emociones placenteras y expansivas, aumentando recursos psicológicos (personales y sociales) valiosos para la prevención del estrés y el agotamiento. *Por último, el tercer artículo es un estudio piloto que evalúa dicha intervención mediante un diseño pre experimental (n=17) que mide posibles cambios entre mediadores y los resultados de jugar Animalia*, específicamente se miden estrés percibido, entusiasmo por el trabajo y fatiga emocional. **Resultados:** (1) Los recursos sociales y las estrategias de afrontamiento reflexivo y apreciativo son efectivos para afrontar el estrés; (2) La reflexión recursiva que una persona realiza sobre su expresión emocional, su cuerpo y emociones, derivan en una regulación emocional espontánea. Esto permite claridad mental, plasticidad emocional y bienestar espontáneo. Por último, el estudio piloto sobre *Animalia* muestra que: (3) la intervención tiene evidencias suficientes para continuar en su desarrollo hacia un ensayo controlado aleatorio; (4) los resultados muestran tendencias hacia la reducción del estrés percibido, el aumento del entusiasmo por el trabajo y el sentido de logro. **Discusión:** Las evidencias de esta tesis sugieren implicaciones para: (1) desarrollar una teoría del estrés con un enfoque transformacional, (2) un enfoque novedoso hacia prácticas clínicas y el diseño de programas de prevención del estrés y el agotamiento, (3) diseño de políticas de salud ocupacional para instituciones públicas y privadas, y (4) mejores prácticas de trabajo y servicios sociales.

Palabras clave: *Agotamiento; Estrategias de Afrontamiento; Emociones; Juegos Serios y Transformacionales; Trabajo Social.*

**POSITIVE EMOTIONS COPING ON STRESS AND BURNOUT PREVENTION:
A PILOT TRIAL OF AN EMOTIONAL EXPRESSION GAME INTERVENTION**

A dissertation by

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Dissertation Abstract

Chronic work stress and burnout, as identified by the World Health Organization (2020), are pervasive issues that have been likened to silent epidemics. A global survey conducted during the 2020 COVID-19 Pandemic revealed a startling increase in the prevalence of negative emotions associated with burnout in the workplace (Gallup, 2021). Despite the alarming global impact of stress and burnout, there remains a significant void in our understanding of the systemic causes of chronic stress and strategies to prevent emotional exhaustion, a precursor to burnout. This research gap is not just a mere academic concern, but a pressing issue that demands immediate attention.

The core objective of this three-paper dissertation is to address these important gaps via building on exploratory research conducted in the context of the 2020 COVID-19 pandemic, and evidence-based research to evaluate a pilot intervention designed to build psychological resources to cope with stress and promote work engagement. In Paper 1, we explore resources and strategies used in the context of the pandemic to cope with stress. In Paper 2, we provide an in-depth description of a groundbreaking therapeutic board game known as *Animalia designed to*

offer mental health benefits. Specifically, this second paper lays out a conceptual foundation to guide, test, and refine a multicomponent game-style treatment for the prevention of stress and emotional exhaustion, the antecedent of burnout. Paper 3 is a pilot study focused on preliminary evidence of change in mediators and proximal outcomes as a result of playing the Animalia game. A pretest - posttest single group two observations pre-experimental design is used to test whether playing Animalia, an emotional expression game, improves well-being through the deconstruction and transformation of unpleasant and constraining emotions into pleasant and expanding emotions. The intervention presented as a transformational game aims to develop personal and social resources through the deliberate practice of awareness, connection, insight and purpose.

Paper 1 focuses on the international doctoral student population, specifically global south students (age 21 and older). Research for Paper 3 was conducted with full-time international graduate students, a population that has been consistently affected by stress and burnout. Implications of this dissertation include providing evidence for the development of (1) a transformational theory of stress through positive coping, (2) practices and programs to prevent burnout and stress in a variety of settings and work environments, (3) public, institutional and organizational health and work environment policies, and (4) better social work and social services practices.

Keywords: Burnout; Coping Strategies; Emotions; Transformational games; Social Work.

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CHAPTER I: INTRODUCTION

Introduction

The World Health Organization [WHO] (2021) conceptualizes mental health as a “state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can make a contribution to his or her community” (p.44). According to the American Psychology Association (APA; 2022), nearly every area of life was affected by new stressors introduced by the COVID-19 pandemic. These stressors have gotten worse and more permanent. The work conditions and demands that emerged during the pandemic made it more visible that everyone is at risk of burnout. Cognizant of the changes in work environments around the world and the challenges presented by chronic work stress and burnout, this three-paper dissertation is designed to (1) explore resources and coping strategies used in the context of the COVID-19 pandemic; (2) describe a novel intervention targeting stress and emotional exhaustion, the antecedent of burnout; (3) conduct a pilot study to test preliminary intervention outcomes; and (4) inform continued refinement and development of the intervention. The intervention focuses on mental health, seeking to build personal and social resources to increase well-being and decrease stress and overextended discrete negative emotions. The intervention—an emotional transformational-focused game entitled *Animalia*—is oriented around four main components or active ingredients: emotional expression, emotional awareness, generative conversations, and metaphorical reasoning. It considers a bottom-up embodied emotion regulation approach presented and configured as a collaborative relationship and transformative game. The underlying aim of *Animalia* is that participants change the perspective from which they have experienced painful and negative emotions to experience emotions so that they become more receptive and curious about

themselves. As a result, participants in the game can transform maladaptive cognitions and reactive responses and reconstitute themselves by distinguishing new patterns regarding their own experiences and daily life challenges and problems.

The dissertation is set up through five chapters. In this first Chapter, I: [a] provide an overview of stress and burnout and [b] Describe the research focus, study overview, and specific aims of each paper [c] Explain the knowledge gaps and the relevance and innovation for Social Work and [d] review existing literature on emotions, stress, and burnout among students as it relates to the topics of the three paper dissertation. In Chapter (2), I present a case study exploring and describing [a] strategies, [b] resources, and [c] coping mechanisms that were useful by international graduate students during the first wave of the COVID-19 2020 Pandemic. In Chapter (3), I provide an in-depth description of the Animalia intervention, covering its philosophical and scientific foundations and a theory of change to understand and evaluate the intervention. In Chapter (4), I present a pilot study with a quantitative analysis consisting of a pre-experimental design that aims to evaluate preliminary outcomes of the Animalia emotional awareness game. Finally, Chapter (5) is an overall discussion and conclusions about the contributions of this dissertation to stress and burnout literature and overall implications for practice, research, and policy. I conclude by describing the problem of personal stress from the perspective of the biology of cognition (Maturana & Varela, 1972), a new epistemology to understand potential solutions to prevent and treat stress and burnout.

Literature Review: Burnout Among Students

Our postmodern culture (Maturana, 2008), namely the achievement society (Byung-Chul Han, 2019) values productivism (Marcuse, 2006) and success. Accordingly, social and organizational demands place a psychological burden that can prove overwhelming, perhaps

especially for university and graduate students. When students are engaged in fulfilling internalized demands without sufficient reflection, personal and social resources, and well-developed coping mechanisms, they are vulnerable to stress and burnout.

The population of interest of this dissertation is adults 21 years old and older who are full-time international graduate students. According to a recent Indeed (2021) survey, 53% of Millennials (ages 25 and 40) were already burned-out pre-pandemic, and they remain the most affected population, with 59% experiencing burnout today. According to the WHO (2019):

Burn-out is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions: feelings of energy depletion or exhaustion; increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and reduced professional efficacy. Burnout refers specifically to phenomena in the occupational context and should not be applied to describe experiences in other areas of life.

Burnout has significant impacts on health outcomes, including chronic fatigue, hypertension, sleep disturbances, and headaches (Maslach & Leiter, 2016); similar health outcomes are seen in burnout to other prolonged stressors. Burnout affects youth workers, students, and new graduates regardless of country, setting, profession, cadre, or discipline. Consistently, across the literature, higher stress and burnout symptoms were reported among young workers, students, and new graduates compared with other workers (Global Health Workforce Network [GHWN], 2019). According to WHO's (2018) survey project (N=13,984) about students' mental health, generalized anxiety was highly prevalent in students from 19 colleges and 8 countries, with roughly one in three students screening positive for anxiety. Similarly, a cross-sectional survey

(N=513) measuring perceived stress suggests that nearly one in three international students reports elevated anxiety symptoms (Wang et al., 2023). A recent systematic review on student burnout interventions that included 2,462 undergraduate and graduate students through 17 studies, 10 randomized controlled trials (RCT), and 7 quasi-experimental trials showed that mindfulness, rational emotive behavior therapy, cognitive behavioral therapy, and exercise were the most common treatments. From those studies, 4 RCTs using rational emotive behavior therapy were demonstrated to reduce burnout effectively with large effect sizes. Rational emotive behavior therapy seeks to identify, challenge, and restructure irrational beliefs that are believed to underpin a maladaptive pattern of behavior drawn from negative emotions (Madigan et al., 2023). Evidence shows that there is a strong relationship between the burnout phenomenon and the propensity to experience unpleasant, constraining emotions (Fiorilli et al., 2017). The transition from student to workforce is often associated with uncertainty, fear, and feelings of incompetence in entering a new role (GHWN, 2019). The unmanageable workload is another significant cause of burnout among this group (Laschinger et al., 2013). Emotional regulation strategies like suppressing, faking, or hiding true emotions led to greater overall burnout (Carson, 2007; Chang, 2009). Additionally, prior research has shown that the incidence and prevalence of unpleasant discrete emotions such as fear, anxiety, desperation, sorrow, frustration, anger, and their intensity may lead to emotional exhaustion, the antecedent of burnout (Chang, 2009; Chang & Davis, 2013; Johannessen et al., 2013)., there are manifold reasons to be mindful of burnout risk among students.

The Etiology of Burnout

Emotions and Stress

Studies on burnout have concluded that the experience and etiology of burnout builds on

a foundation of emotional exhaustion, which can precipitate a “landslide” resulting in a personal career crisis, deriving in feelings of cynicism and detachment from the job, and a sense of ineffectiveness and lack of accomplishment (Maslach, 2017). Within this framing, burnout has a three-stage etiology: (a) imbalance of job demands and energy resources, (b) precursive symptoms such as stress, depression, and anxiety, and (c) burnout syndrome (Demerouti et al., 2002). Here, burnout is framed not as a problem whose genesis is in individuals but rather as a product of the socially constructed environments in which we work. Humans are fundamentally relational, social, and emotional beings (Maturana, 1996). When a workplace does not recognize the human side of work, and there are major mismatches between the nature of the job and the nature of people, then there will be a greater risk of burnout (Maslach, 2017). Selye’s (1957) seminal work defines three stages of stress: the alarm reaction, the stage of resistance, and the stage of exhaustion. Cannon (1937) documented this ‘emergency reaction’ constituted by the physiological changes associated with increased sympathetic nervous system activity. Hess (1957) documented an opposite response; he hypothesized that the parasympathetic response was a protective mechanism against overstress that promotes restorative processes (Jacobs, 2001). Benson (1970) named this restorative process the ‘relaxation response’; he argued that this response is mediated in the hypothalamus and is an inborn counterbalancing mechanism to the stress response (Jacobs, 2001).

In historical terms, the literature on psychological stress and the literature on emotions have generally been treated as separate and distinct. Social and biological scientists interested in emotions are often unaware of relevant stress literature and vice versa (Lazarus, 1993). Consistently across literature, various fields of study highlight the importance of emotions and emotional literacy in overcoming social problems. Each distinct emotion is elicited and

configured by a distinctive pattern of cognitive appraisal. Chang (2009) argues that it is necessary to review discrete unpleasant emotions and their antecedent appraisals to understand how the appraisal of events contributes to emotional exhaustion. The deconstruction of judgments or a re-appraisal process may contribute to treating and preventing burnout (Chang & Davis, 2013; Johannessen et al., 2013).

Most of the stress research to date, including that described by Lazarus and Folkman's (1984) transactional theory of stress and coping, consists of reactive coping (Biggs, 2017). It has been only recently that proactive and preventive coping has received research attention. Research has supported the mediating role of proactive coping between stressors and various health and work-related outcomes (Biggs, 2017). For example, Angelo and Chambel (2012) demonstrated that proactive coping significantly mediated the relationships between job demands and psychological burnout, and work engagement for a sample of firefighters. Similarly, Nizielski, Hallum, Schutz, and Lopes (2013) reported that proactive coping significantly mediated the relationship between emotion appraisal and psychological burnout, such that levels of burnout were again reduced when proactive coping occurred (Biggs, 2017). Among students, preventive and proactive coping demonstrated mediating impacts between stressors and student engagement, supporting the beneficial effects of these types of coping on individual well-being outcomes (Gan et al., 2007).

Knowledge Gap

Despite the scientific advancements over the last 30 years in documenting burnout, little attention has been paid to understanding how interpersonal relationships and appraisal processes in the social and cultural environment might explain the propensity to experience unpleasant discrete emotions that cause burnout and the protective effects of positive emotions (Fredrickson,

2001). Research is needed to understand the role of preventive coping as a mediator between personality and support on health and work-related outcomes (Biggs, 2017). There are limited studies on emotional patterns and positive coping strategies as antecedents of stress and burnout prevention, and no studies evaluating serious games interventions focused on international graduate students¹.

Research examining culture, stress, and discrete emotions has largely remained underexplored. There are no stress and burnout systemic interventions addressing the organizational culture to prevent stress and burnout systematically and collectively. Burnout and stress are a systems-based issue that cannot be meaningfully targeted through individual interventions alone (GHWN, 2019). Most prevention programs that address burnout focus on the individual without addressing the institutional context. Research shows that a combination of both people- and organization-directed interventions had longer-lasting positive effects. Novel and better-implemented programs should be offered and evaluated, including both person- and organization-directed measures. Successful intervention for burnout should consider the broad range of causes and incorporate a variety of different therapeutic tools, such as training in coping strategies and interpersonal skills to increase social support, the management of negative emotions, the improvement of communication skills, the discussion of specific professional high-stress situations, and the use of relaxation techniques should be considered (Wiederhold et al., 2018). To avoid resistance in the workplace to implement a program, design and implementation should take the specific needs of participants into consideration (Awa et

¹ Most of the burnout literature is focused on workers and working environments. I had chosen to document my research using this approach given the lack of literature for international graduate students. Authors agree that although not formally considered work, the activities that students undertake for education share many similarities with those undertaken in work contexts (Schaufeli et al., 2002; Salmela-Aro et al., 2009).

al.,2009).

Research Focus and Study Overview

This dissertation seeks to address these gaps and is a first step in testing an emotional transformation intervention for the treatment and prevention of stress and emotional exhaustion while concurrently inducing a positive coping strategy founded on appreciation, gratitude, and the reappraisals of patterns associated with the personal challenges of international students in their institutional context. Cognizant of the gaps in the literature and new stressors derived from the COVID-19 pandemic, through this dissertation, we test the preliminary efficacy of a multi-component intervention as a potential solution for the prevention of burnout guided by the study of emotions from an interdisciplinary perspective focusing on (1) Exploring resources and strategies used to cope with stress during the COVID-19 pandemic, (2) Describing a novel intervention and its conceptual underpinnings, (3) piloting an intervention founded on emotional expression, emotional readiness, generative conservations, and metaphorical reasoning as main components. The studies from this dissertation were conducted in major university and educational settings with international graduate students living in the United States and México.

In summary, this three-paper dissertation consists of:

Paper 1: An exploratory qualitative study of resources and strategies used in the pandemic to cope with stress

Paper 2: An in-depth description of the *Animalia* intervention (laying the conceptual foundation)

Paper 3: A pilot trial of the *Animalia* program, using a pretest, posttest single group with two observations pre-experimental design.

Specific Aims

Aim 1 (Paper 1): Explore, in the context of the COVID-19 Pandemic, what resources and strategies were useful to cope with stress. The aim of Paper 1 is to understand how the COVID-19 Pandemic impacted the life and work context of international graduate students by documenting their experiences during the lockdown and identifying which resources and strategies were more useful for them to cope with stress. The personal experiences of students have largely remained underexplored, and most stress and coping studies have ignored the situational and life context of the participants and their appraisals of how they could realistically cope. This qualitative case study seeks to learn from a cohort of international social work students how their personal and interpersonal appraisals are related to specific resources and strategies.

Aim 2 (Paper 2): Establish a conceptual foundation and describe the multicomponent mindfulness awareness intervention (Animalia) in depth.

The aim of Paper 2 is to bridge cultural biology theory with a practical approach by describing in depth an intervention based on a game designed to foster emotional awareness, mindfulness, and the deconstruction of cognitive emotions. This paper will allow the integration of cognitive and emotional theories with social psychology and biological and emotional theories by proposing a conceptual framework that introduces new concepts from the field of cultural biology and the neuroscience of wellbeing. It will provide practitioners with a conceptual framework, which will be supported by empirical evidence, on the effects of effective personal and emotional change. In short, the aim of this first paper is to present a conceptual framework that guides empirical research to test and evaluate an intervention focused on the prevention of stress and emotional exhaustion.

Aim 3 (Paper 3): Evaluate the preliminary outcomes of the multicomponent emotional expression intervention (*Animalia*) via a pre-experiment.

The aim of Paper 3 is to pilot the intervention with a pre-experimental design to examine the intervention and test *Animalia* as a potential treatment for stress and emotional exhaustion. Paper 3 will include the following goals:

1. To assess the baseline level of perceived stress, burnout and work engagement among a sample of full-time international students residing in the United States and Mexico.
2. Find preliminary evidence of change by employing the *Animalia* game with student participants in a pre-experimental group and assessing whether perceived stress and burnout levels among student participants reduce after participation.
3. Find preliminary evidence of change by employing the *Animalia* game with student participants in a pre-experimental group and assessing whether work engagement levels among student participants increase after participation.

The final aim of *Paper 3* is to refine the intervention in the context of practice and, if adequate, continue developing it.

Cognizant of the burnout literature, the burnout prevention program design fulfills gaps and WHO's recent classification of burnout as a medical disease. This dissertation and the implementation of the *Animalia* program will offer participants the opportunity to experience through a holistic multi-component treatment the nature of their own humanness and biology. I hypothesize that this dissertation will provide preliminary evidence of a practice that will help us reflect on how we can make sustainable lifestyles. Furthermore, this dissertation will also move toward the refinement of an intervention that can be tested in a fully powered randomized control trial. The findings of the proposed study will inform social workers, care professionals, and

universities on how to aid young adults in learning how to deconstruct, reshape, reframe appraisals of unpleasant emotions and develop personal and social adaptive strategies to prevent stress and emotional exhaustion, while congruently with their educational challenges learn to thrive in a sustainable way.

Relevance for Social Work

The structure and functioning of universities and educational settings shape how people interact with one another and how international graduate students carry out their studies and duties. From this perspective, it can be argued—as is the case in this dissertation—that burnout is largely a cultural and organizational environmental problem. The urgency for addressing burnout arises not simply from the discomfort inherent in the syndrome but from serious consequences in the workplace. The experience of burnout has been linked to a long list of negative outcomes — personal, social, and organizational (Gallup, 2021).

Against conventional wisdom, stress, and burnout are not conceptualized here as a personal or individual problem. We argue that this perspective obscures and divides because it denies institutional and organizational responsibility and is rooted fundamentally in an epistemological problem. Relationship problems and institutional interactions should be the main concerns of social workers seeking to empower, liberate people, and promote social change. By describing in-depth, testing, and refining the Animalia intervention, we promote agency and self-liberation; the overall outcome of the research can have important repercussions for a) Increasing the levels of well-being and mental health in a broad variety of workplaces; b) Developing practices, programs and policies focused on stress and burnout prevention and treatment. This would allow not only the prevention of stress but also help recover our humanness in the workplace. Organizations of the private and public sectors can benefit from this research to increase

productivity and reduce the incidence and prevalence of diseases caused by stress and burnout; c) Protect and guide the youth. Stress and Burnout can be prevented in the initial stages of adult life. This research may be useful for universities to reduce attrition rates both at undergraduate and graduate levels, as well as in international programs, and to promote habits that foster generativity (Erickson,1950); and d) Bridge the body of knowledge between psychology and biology, particularly bringing light to understand the individual and social perspectives on the etiology of stress and emotional exhaustion.

The role of the social work professional should be one that combines the insights of the social sciences to develop social system interventions and transform the structural forces (at individual, organizational, and community levels) to enhance well-being across regions, nations, and the globe. Within the field of social work —and in the case of this dissertation— the focus will be placed on understanding the organizational environment. Therefore, through this dissertation we will report how organizations should shape their culture, human behaviors, and social work practice to prevent stress and burnout.

Innovation

A collaborative and relationship game is one of the main components of the multicomponent treatment under research. Participants are focused on the present moment and can listen and see each other when playing. This level of engagement creates conditions to help people in treatment move swiftly from a difficult emotional state into a more positive one, allowing spontaneous well-being. The intervention is innovative, in our opinion, because it shifts the focus from the status quo (where traditionally research is focused on cognitive emotional regulation processes and discrete emotions are observed as entities) by considering embodied emotion regulation processes (Maturana & Varela, 1967; Vazquez-Rosati et al., 2021), observing

emotions as a self-organizing system with an autonomous response to the environment (Izard, 1971; Izard et al., 1965). Furthermore, the intervention legitimizes participants' positive and negative emotions through a non-competitive game, away from a cartesian or polarization perspective that demands social conformity. Another innovative feature is that the game uses self-regulatory processes in a real-life setting to learn, practice, and apply emotional competence in daily life. Personality development emerges through interactions of emotions and cognition and their linkage in affective-cognitive structures (Izard et al., 2000). Finally, the study design bridges the fields of cognitive and affective neurobiology and clinical psychology.

Theoretical Foundations and Conceptual Frameworks

In this section I present relevant theories to address the problem of stress and health from an emotional approach. This dissertation is drawn from multiple theories to frame the issues, define the questions of inquiry, and guide the quantitative and qualitative analyses. This bio-psycho-social study proposal is grounded in a systems perspective (Bertalanffy, 1940) and three emotional theories: (1) Living systems theory, grounded on the biology of cognition (Maturana & Varela, 1969, 1970) and the biology of love (Maturana & Verden-Zoller, 2008); (2) Appraisal and social appraisal theory (Lazarus, 1993; Smith & Ellsworth, 1988; Fridja, 2000); and (3) The Broaden-and-build theory of positive emotions (Fredrickson, 2004).

The Biology of Love

The Biology of Love is a theory that comes from the biological sciences drawn from living systems theory. According to Maturana and Verden-Zoller, love is the fundamental constitution of humanness (2008). They argue that love is the grounding of our existence as humans and is the basic emotion in our systemic identity as human beings. Maturana (2008) describes love as the domain of those relational behaviors through which another (a person,

being, or thing) arises as a legitimate other in coexistence with oneself. Following Maturana and Verden-Zoller (2008, p. 223–225):

Love is the relational behavior through which each arises in its legitimacy in mutual respect and mutual acceptance, leading to mutual trust. Furthermore, Loving entails “seeing” and hence, acting accordingly as the quality of the relationship becomes the center for attention and care. The presence of purposes, aims, or expectations in a relationship denies love, as these become the center of attention and care. Such purposes, expectations, and aims generate blindness with respect to the participants in the relationship, whoever or whatever these may be. That is, by attending to what one expects the other to do, the other disappears and the relationship does not take place in love but occurs in use and manipulation.

Love might be neglected when people in interaction and relationships cannot suspend future-oriented expectations and demands and past-oriented judgments and assumptions. We are love-dependent animals and social beings; we get ill if we are deprived of love. Love may be operationalized and observed as the universal desire for well-being.

Appraisal and Social Appraisal Theory

This theory comes from psychology and social psychology. According to appraisal theory or cognition emotion theory, each distinct emotion is elicited and configured by a distinctive pattern of appraisal. The main proposition of this theory is that the interpretation of events rather than events themselves causes emotions. Emotions are influenced by the appraisals of motive-incongruence, importance, agency, situational control, and problem-solving efficacy (Lazarus, 1993; Smith & Ellsworth, 1988). In Fridja’s (2000) theory of emotions, an emotion is a

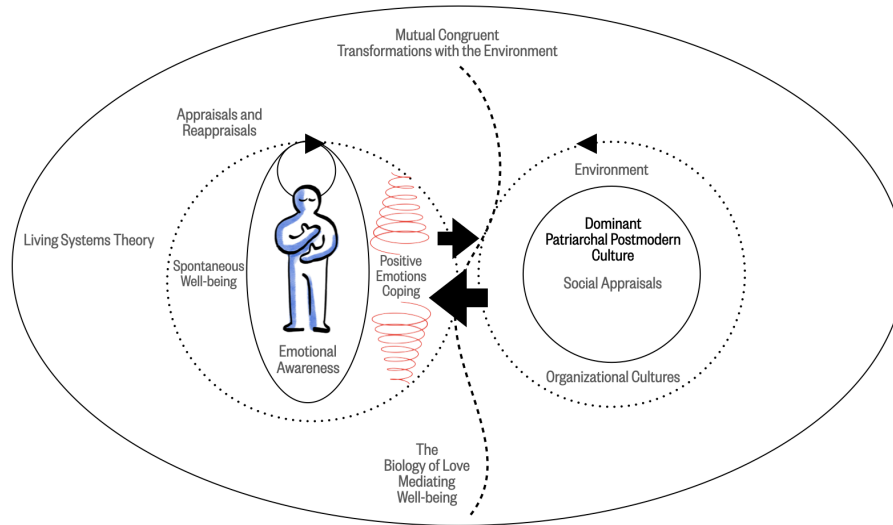
change in readiness for action motivated by our appraisal of an event or situation regarding our wellbeing. In Lazarus' theory of stress, it is stated that stress is experienced when a person perceives that the demands exceed the personal and social resources the individual can mobilize. Coping strategies suggest reappraisal processes of both the experienced emotion and the judgments of the events or the troubled relationship with the environment. In other words, coping is the process of seeking the most serviceable meaning available in an encounter and acting on it. It involves supporting realistic actions (problem-focused coping) while also permitting the person to view the encounter in the most favorable way possible (emotion-focused coping).

Broaden-and-Build Theory of Positive Emotions

After three decades of the development of positive psychology, and the formal study of positive emotions. This theory underscores the ways in which positive emotions are essential elements of optimal functioning and, therefore, an essential topic within the science of well-being (Diener, 1991; Fredrickson, 1998, 2001, 2004; Seligman & Csikszentmihalyi, 2000). The theory suggests that positive emotions (i) broaden people's attention and thinking, (ii) undo lingering negative emotional arousal, (iii) fuel psychological resilience, (iv) build consequential personal resources, (v) triggers upward spirals towards greater well-being in the future; and (vi) seed human flourishing. The theory also carries an important prescriptive message. People should cultivate positive emotions in their own lives and the lives of those around them, not just because doing so makes them feel good in the moment but also because doing so transforms people for the better and sets them on paths toward flourishing and healthy longevity (Fredrickson, 2004). Figure 1 Presents a model integrating the selected theories.

Figure 1

Transformational Stress Model, integrating Living Systems Theory, Biology of Love, Appraisal theory and the Broaden and Build Theory of Positive Emotions



Literature Review

This section provides an overview of the existing literature on emotions, stress, burnout, and students as it relates to the topics of the three papers in the proposed dissertation. Specifically, we will introduce key concepts and research in the areas of emotions, culture, and patriarchy; emotional literacy and health; emotions and social justice; and emotions, burnout and mindfulness, coping, and stress.

Emotions, Culture, and Patriarchy

Our historical moment is one in which postmodern culture has favored the development of rational thought over affection and the dominance of reason over the instinctual (Naranjo, 2018). It is evident that Western culture nurtures and values rationality as if it were the most important aspect or feature of being human. Consequently, emotions are frequently ignored in organizational and professional settings (Simon, 1976), as they might be considered impertinent

or less important than rationality or cognitive behavior (Barsade & O'Neill, 2014). Nevertheless, emotionality and rationality both unite as they are interconnected and inseparable in the biology that defines our humanness (Maturana & Varela, 1996; Damasio, 2000; Davila, 2008). We are relational beings, emotional, intellectual, social, and individual (Gilligan, 1995).

Maturana (2008) argues that the systematic, systemic denial of compassionate love through rational arguments using notions of efficiency, economy, progress, purity, obedience to God, or perfection pretends to justify such negation and is a carefully cultivated feature of our patriarchal culture. Male dominance in all spheres of life perpetuates the patriarchal culture and the patriarchal society, where the subjugation of women and the submission of others through institutions and conformity to different forms of inequality (Naranjo, 2017). Since the dominant patriarchal culture systematically denies love, aggressive behaviors can be easily observed through competition, conflict, and inequality. A conflict between two people occurs when it is faced through behaviors that deny the legitimate existence of the other in coexistence (Maturana & Verden-Zöller, 2008). Patriarchalism, through mistrust and control, manipulation and appropriation, domination, and submission, interferes with love, pushing human relations away from the domain of collaboration and mutual respect (Maturana & Verden-Zoller, 1996). Naranjo (2017) argues that the “patriarchal mind” is a complex process that involves a loss of contact with our loving potential and a loss of contact with our deep understanding of ourselves. Since love is the basis for the conservation of our human being-ness as well as our well-being (Maturana & Verden-Zoller, 1996). Naranjo argues that the patriarchal mind, through the perpetuation of inequality and unloving behaviors, could be the etiology of all mental illnesses and other diseases, not only in human organizations but in society.

Emotion Literacy and Health

Emotions are an especially important aspect of human development and health (Sen & Nussbaum, 2001); on the contrary, the systematic neglect of human emotions in organizations may profoundly impact people's quality of life, well-being, and health. Researchers have not paid enough attention to love and health, and have not been fully studied, nor have their consequences. Love and care have not been regarded as subjects of sufficient political importance to be mainstreamed in theory or empirical investigations (Lynch et al., 2009). Emotional issues in organizational behavior are, at best, buried in the service of cognition or, at worst, ignored (Simon, 1976). Literature has conceptualized organizational culture almost exclusively from a cognitive perspective, as a set of cognitions shared by social unit members (Rousseau, 1990; O'Reilly et al., 1991). Organizational culture literature has neglected emotions (Barsade & O'Neill, 2014).

A growing number of studies suggest that developing the various facets of emotional literacy benefits human relationships, societies, and health (Goleman, 1996; Ornish, 1998; Stewart-Brown 2000). Several authors suggest that emotions, particularly compassion, have a key role as viable solutions to address inequality and health problems such as depression, burnout, malnutrition, etc. For Naranjo (2017), disease is an intra-psychoic disintegration (lack of coherence or dissonance between thinking, feeling, and willingness). Stewart-Brown (2000) argues that the conflicts of inequality and health might have a solution through emotional literacy. Emotions, particularly regarding education, are important because they are part of a drive toward a more inclusive society (Sharp, 2001).

Emotions and Social Justice

The affective worlds of love, care, and solidarity are sites of political importance for

social justice that need to be examined while recognizing their inter-relatedness with economic, political, and cultural systems (Baker et al., 2004). For Nussbaum (2001), emotions are a basic human capability to preserve human dignity; emotional development should not be blighted by fear and anxiety. Emotions can be judgments of value, acknowledgments of neediness, and lack of self-sufficiency. Fridja (2000;1986) and Lazarus (1999;1991) argue that all our activities are motivated by goals and that all our emotions are evaluations of the world around us. If the situational demands are inconsistent with what an individual wants, this incongruence leads to unpleasant emotions (Lazarus,1991).

An emotional contradiction happens when a person embraces the simultaneous presence of opposed emotions (Weigert, 1991), leading to conflict and uncertainty. Maturana (2018) argues that the notion of scarcity might be the greatest source of human conflict and suffering. A scarcity mindset creates emotional problems and contradictions that trap human beings in individualism, separateness, and stasis, obscuring our social dimension that is connected, co-creative, and transformative (Lappé, 2013; Capra, 1996). The scarcity mindset is a feature of the patriarchal mind that uses control to deny acceptance, trust, and self-confidence, thus love. Emotional contradictions can lead to human conflict, uncertainty, and stuckness. However, every psychological paradox can also be an emotional step back to move forward (Kross, 2008), an opportunity for human growth.

Emotions, Burnout, and Mindfulness

In Fridja's (2000) theory of emotions, an emotion is a change in readiness for action motivated by our appraisal of an event or situation regarding our well-being. Pines (1994) describes burnout as "the end result of a process in which idealistic and highly committed people lose their spirit." An emotional investment makes education activists vulnerable to feeling

hopeless, overwhelmed, and discouraged feelings that, over time, can culminate in burnout (Kovan & Dirkx, 2003). Emotional exhaustion is the core element of burnout and the most obvious manifestation of this complex syndrome. Maslach et al. (2001) noted that when people describe themselves or others as experiencing burnout, they most often refer to the experience of exhaustion. Evers et al. (2004) referred to emotional exhaustion as feelings of being overextended and depleting one's emotional resources. Chang (2009) argues that the habitual patterns in teachers' judgments may contribute significantly to teachers' repeated experiences of unpleasant emotions. Those emotions may eventually lead to burnout. To ease teacher burnout, teachers need a better understanding of how their emotions are triggered and then learn how to regulate them (Chang (2009). The future of research on emotions and health requires attention to the central context of interpersonal relationships, just as the future of research on relationships and health requires attention to emotional processes (Smith & Weihs, 2019).

Mindfulness is a technique that nurtures awareness by suspending judgment and promoting attention to the present moment (Brown & Ryan, 2003; Glomb et al., 2011). Mindfulness interventions effectively reduce stress and anxiety by bringing acceptance and consciousness forward, therefore useful to facilitate re-appraisal processes. The term mindfulness refers to a quality of awareness that includes the ability to pay attention in a particular way: on purpose, in the present moment, and non-judgmentally. Mindfulness includes the capacity for lowering one's own reactivity to challenging experiences; the ability to notice, observe, and experience bodily sensations, thoughts, and feelings even though they may be unpleasant; acting with awareness and attention (not being on autopilot); and focusing on experience, not on the labels or judgments applied to them (Krasner et al., 2009).

Mindfulness-based programs have been demonstrated to reduce burnout among

healthcare physicians (Krasner et al., 2009). Substantial evidence suggests that consistent practice of mindfulness increases mindfulness and reduces anxiety, depression, and stress (Grossman et al., 2004; Hofmann et al., 2010; Holzel et al., 2011). Several RCT studies provide evidence that mindfulness and compassionate mindfulness are effective interventions to reduce stress and increase the levels of well-being (Smeets et al., 2014; Galante et al., 2016; Hawkes & Neale, 2019). Dispositional mindfulness has demonstrated a positive relationship with job satisfaction, work-family balance, sleep quality, vitality, engagement, and reduced emotional exhaustion (Hülshager et al., 2013; Reb et al., 2015).

Stress, Coping, and the Etiology of Stress

The transactional theory of stress and coping, developed by Lazarus and Folkman (Lazarus, 1966; Lazarus & Folkman, 1984), has been particularly instrumental in shaping stress and coping research over the past five decades (Biggs, 2017). Transactional explanations of stress emphasize the cognitive-phenomenological processes that enable individuals to attribute meaning to their environment, emphasizing the relational, dynamic nature of the transaction in which stress may arise (Lazarus, 1966; Lazarus & Folkman, 1984). Historically, research using this model has been focusing predominantly on the negative effects of stress, negative emotions, and emotional and problem-focused coping. Psychological stress is a complex phenomenon, and researchers have attempted to explain its etiology by focusing too long on negative emotions, leaving stress research stagnation (Biggs, 2017). Revisions of the transactional approach in 2000 by Susan Folkman led us to more effectively consider the positive and negative emotions that arise during the stress process. Since then, positive emotional coping has gained attention among stress researchers. Furthermore, beyond problem-focused coping and emotional coping, the dynamic experience of stress coping has also been acknowledged. Schwarzer (2000) proposed

four new categories of coping depending on the temporal location of the (potential) stressor and the degree of certainty with which it would occur: reactive, anticipatory, preventive, and proactive coping. Reactive coping deals with the harm or loss already experienced, thereby situating it in the past and as having certainly occurred. Anticipatory coping is enacted in response to a recognized upcoming event of likely certainty in the short term. Preventive coping is utilized to deal with probable future stressors, although their eventual occurrence is uncertain, and it reflects efforts to accumulate resources to reduce the severity of the stressors (Schwarzer & Taubert, 2002). Finally, proactive coping focuses on accumulating resources to enhance one's potential and opportunities for personal growth (Schwarzer, 2000).

Acknowledging that it is neither the individual nor the environment alone that produces stress but a complex transaction between the two (Folkman, 1984; Lazarus & Folkman, 1984) and that stress coping can come from various perspectives founded on negative and positive emotions. The goal of this 3-paper dissertation is to explore, reflect, and evaluate the biological underpinnings of positive emotions coping and to propose a personal transformational approach for stress prevention through emotional expression, appreciation, and play.

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CHAPTER II

The Experiences of International Doctoral Students During the COVID-19 Lockdown

The Experiences of International Doctoral Students During the COVID-19 Lockdown

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Abstract

This study explored the impact of the COVID-19 lockdown on international doctoral students at a US university. It elicited narratives of coping with the lockdown and stress-reducing resources and strategies. The lockdown allowed students to focus on their work, and additional household and child caregiving roles required students to develop innovative coping practices. It also forced students without adequate social networks and community integration to experience more uncertainties. All respondents experienced strong disrupted emotions, e.g., anxiety and sadness. Social closeness was an effective stress antidote. Universities should create programs to expand and nurture students' social networks aligned with their interests and needs. Health policies and programs aimed at preventing and treating stress and burnout among doctoral students should focus on their social environment.

Keywords: Coping, emotions, international students, pandemic, student experience

Introduction

The coronavirus pandemic has disrupted life as we know it. Within a few weeks, the outbreak spread globally, infecting nearly 2 million people and causing over 130,000 casualties (World Health Organization, 2019). In addition to the spread of fatal diseases caused by this outbreak, inadequate government leadership, the fragility of health systems, and anticipated economic consequences also spread chaos and uncertainty globally. By April 1, 2020, 43% of the world population was in lockdown in more than 80 countries and territories around the world

(Marinoni et al., 2020). This lockdown impacted every aspect of life, notably higher education, as educational institutions had to cancel in-person classes because of sanitary measures (Marinoni et al., 2020). Educational institutions were among the first to execute and adequately implement remote learning practices in times of prescribed social distancing. Universities worldwide quickly adapted to the pandemic, taking advantage of prior experiences and technological availability. Nevertheless, many teachers and students had to learn new ways, create new habits, and promptly adapt to new technological platforms.

Research has indicated that doctoral students experience stress mostly related to academic responsibilities and pressures, finances or debt, and poor work/school life balance (Maher et al., 2004). International students have expressed experiencing additional challenges: language and cultural barriers, social isolation, financial hardships, difficulties finding jobs post graduation, and personal psychological adjustment, such as homesickness, loneliness, and lost identity (Aubrey, 1991; Tseng & Newton, 2002). The lockdown due to COVID-19 added to the challenges of doctoral students, making it an important area of exploration. In this context, the study set out to explore how this disruption impacted international doctoral students studying in the U.S. We adopted the definition of international students given by the United Nations Educational, Scientific and Cultural Organization [UNESCO] Institute for Statistics for this study, which states that they are “students who have crossed a national or territorial border for the purpose of education and are now enrolled outside their country of origin.” The U.S. hosted 957,475 international students in 2020, close to 15% of the world's international student population (UNESCO, 2020), making it a good case. This exploratory case study attempts to describe the experiences of international doctoral students during the coronavirus lockdown, particularly exploring what resources and coping mechanisms were practical for international

doctoral students to cope with the situation. Although several quantitative research studies on graduate student stress and coping mechanisms have been conducted (El-Ghoroury et al., 2012; Holahan, 1979; Mechanic, 1962), there is a lack of in-depth qualitative research on international doctoral students, specifically in the field of social work. Qualitative research is vital because it enables an in-depth understanding of how international students internalize stressful events and identify individualized matching stressors with coping strategies and resources.

Literature Review

Stress among International Doctoral Students

Across the literature and for a long time, doctoral students have been consistently reported to experience high stress levels due to the emotional demands and the emotional labor implicit in their jobs (World Health Organization [WHO], 2020). In addition to family responsibilities, students meet with two additional sources of stress: the academic environment and the clinical work environment. The transition from student to the workforce is associated with uncertainty, fear, and feelings of incompetence in entering a new role (WHO, 2020). To put up with all the responsibilities, students prevalently get fewer hours of sleep. A recent study with 2683 graduate students, including doctoral students, showed that they slept 6.4 hours per night on average (Allen et al., 2020). This is crucial information since lack of sleep is a significant risk factor for anxiety and depression (Allen et al., 2020). Other factors that compound anxiety include long working hours, challenges in adapting scientific knowledge to practice, limited contact with family, poor support, and lack of leisure time (Duchscher & Myrick, 2008). Research suggests that perceived role conflict and emotional demands are "the most important and most consistent risk factors" for psychological distress among this group (Johannessen et al., 2013, p. 12). Students dealing with family issues during their doctoral programs often experience

significant additional pressure (Maher et al., 2004). Various countries estimate the attrition rate for doctoral students to be 50%; depending on the field of study, it varies from 30% to 70% (Council of Graduate Schools, 2010; Groenvynck et al., 2013; Rigler et al., 2017; Vassil & Solvak, 2012). According to Beeler (1991), the adjustment process of becoming a doctoral student places a psychological burden that overwhelms some students. Parenting responsibilities, the emotional toll of a divorce or death, and the financial security associated with success are diversions that might lead doctoral students to exhibit concerns regarding stress and emotional and psychological well-being (Moyer et al., 1999).

International students experience additional stress coping with cultural differences during their stay in the United States (Heggins & Jackson, 2003; Rahman & Rollock, 2004; Schmitt et al., 2003). Evidence suggests that international students experience more intense stress than their fellow American students (Groenvynck et al., 2013). Research shows that stressors closely associated with international students fall into two categories: stressors related to the academic and educational environment and stressors in the sociocultural and personal domains (Aubrey, 1991). Cena et al. (2021) found that differences in the education system and issues affecting social relations on campus contributed to educational challenges, and language and cultural barriers contributed to adjustment challenges for international students. Educational challenges include adaptation to the academic environment, the pressure of academics with an obligation to succeed, an adjustment to a foreign university system and the skills needed for success, and long hours of study and work (Akhtar & Kroener-Herwig, 2019). Scholars point to a high level of social alienation concerning the personal level and sociocultural challenges (Owie, 1982); psychological changes daily in their acculturative experience (Akhtar & Kroener-Herwig, 2019); general living adjustment, such as becoming accustomed to life in America and its food, housing,

environment, and transportation; personal and psychological adjustments, such as homesickness, loneliness, or feelings of isolation and lost identity (Tseng & Newton, 2002). Notably, “physical wellness could positively influence emotional wellness,” and academic challenges could negatively influence emotional wellness (Koo et al., 2021, p. 801). Scholars highlight financial factors as essential stressors during international students' adjustment to the new environment (Oropeza et al., 1991). Chen (1999) argues that social isolation and alienation may restrict the social support necessary to energize and refine students' internal coping resources and increase stress.

Stress and Coping

Our postmodern culture (Maturana & Davila, 2008), namely, the achievement society (Han & Butler, 2015), values productivism (Marcuse group, 2006); therefore, the notion of stress can be “positive” (eustress) when it leads to success in fulfilling such demands. Since the human body reacts to complex life challenges and events such as diseases (Selye, 1976), the boundaries between eustress and distress are unclear. Literature often describes stress as a person's response mechanism or a survival reaction to an adverse event (Folkman, 2008; Ursin & Eriksen, 2004). Cannon's classic observations show that threat perception activates the sympathetic nervous system and triggers an acute stress response that prepares the body to fight or flee (Cannon, 1915). Schauer and Elbert's (2010) work reflects a more contemporary understanding of the fight or flight response. Their elaborated model denotes physiological/psychological/behavioral responses to threats as the 'defense cascade.' They describe a series of stages that individuals exposed to threat or trauma may go through, including freeze, flight, fight, fright, flag, and faint. Other authors suggest that stress is a response syndrome of adverse effects that develops because of prolonged and increased pressures that an individual's coping strategies cannot control (Ursin

& Eriksen, 2004). Doctoral students may be particularly susceptible to chronic stress and precariousness, as they run a high risk of having or developing mental health problems, especially anxiety and depression, due to factors such as organizational policies, work-life imbalance, job demands, and career prospects outside academia (Levecque et al., 2017). Evidence from studies with international students supports the view that coping strategies influence adaptation, sense of life satisfaction, performance, and well-being (Struthers et al., 2000). Endler (1997) describes three basic coping styles: task-oriented, emotion-oriented, and avoidance-oriented. A considerable body of research demonstrates that social support can buffer the impact of stress on numerous outcomes, notably when the type and amount of support offers an excellent fit for recipient needs (Uchino & Birmingham, 2011). Mallinckrodt and Leong's (1992) study on international graduate students' stress and social support reveals that social support directly affects psychological adjustment and buffering effects on life's stresses. El-Ghoroury et al. (2012) assessed a national sample of 387 graduate students (54% of whom were doctoral students) in the field of psychology to examine stressors, coping strategies, and barriers that interfered with their optimal functioning. The results revealed that 70.5% of respondents experienced stress mostly related to academic responsibilities and pressures, finances or debt, and poor work/school and life balance. The major coping strategies discerned were friends' support, family support, talking to a classmate, regular exercise, and pursuit of hobbies. A clear outcome of these studies is that social support, particularly from the academic program (student–faculty relations, quality of instruction, curriculum flexibility, tangible support, and relations with other students), is essential to the well-being of international students. These studies suggest that the lack of social support may be a source of stress.

The Study Context

Although several quantitative studies have investigated graduate student stress and coping (El-Ghoroury et al., 2012; Holahan, 1979; Mechanic, 1962), the personal experiences of doctoral students have largely remained underexplored (Amran & Ibrahim, 2012). Most stress and coping studies have ignored the situational and life context of the participants and their appraisals of how they could realistically cope (Lazarus, 2000). Moreover, stress remains a salient personal experience of doctoral students (Pappa et al., 2020). There are limited qualitative studies on stress and international doctoral students, and there is a lack of in-depth qualitative research on the subject, particularly in social work. In-depth qualitative research facilitates understanding how international students internalize stressful events and helps identify individualized matching stressors with coping strategies and resources (Chen, 1999; Dickerson et al., 2014). Given the unprecedented events of the current pandemic and the effect of the lockdown on international social work doctoral students, studying cross- cultural individualized coping strategies and resources is essential. It may help expand the body of knowledge. Toward this goal, this study posed the following research questions:

- A) What are the experiences of these students during the COVID-19 lockdown?
- B) What coping strategies and resources did the students identify as effective?

Through these questions, the study aims to describe the experiences of international doctoral students during the COVID-19 lockdown and to document the coping strategies and resources that they found to be effective in dealing with the circumstances originating from the pandemic.

Theoretical Framework

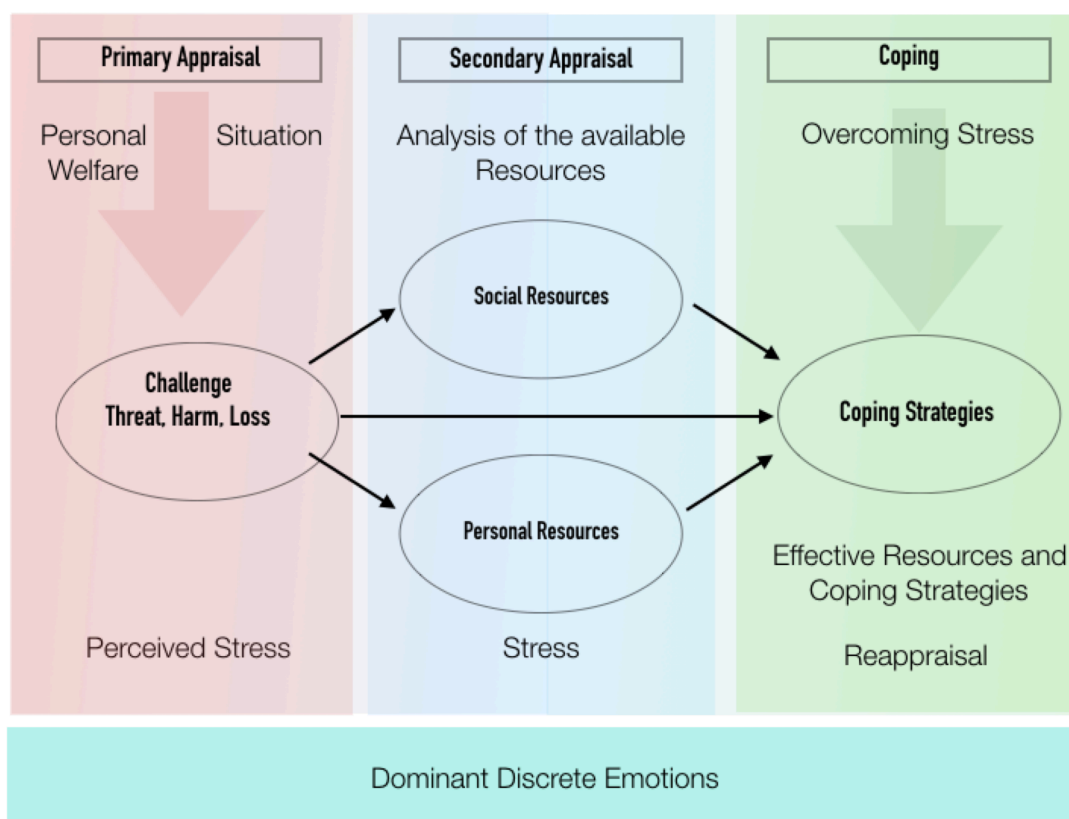
This research is grounded in psychology and social psychology. The research questions are guided by appraisal theory, particularly the theoretical framework propounded by Lazarus and Folkman's Transactional Model of Stress and Coping (Lazarus & Folkman, 1984). The

central proposition of appraisal theory is that the interpretation of events, rather than events themselves, triggers individuals' reactions to stress. The origin of this theory was stress studies conducted during the Second World War. Lazarus and colleagues' seminal work has been an essential reference for studies on stress since 1950. In the early 1980s, Lazarus collaborated with Folkman and developed the transactional model of stress and coping (see Figure 1). Since then, this framework has critically guided stress and coping research. Numerous studies on a wide variety of different populations and contexts have used this framework. According to Lazarus (2000, 2001), this theory captures four fundamental processes: appraising, coping, the flow of actions and reactions, and relational meaning. Appraising evaluates our ongoing and changing relationships with others and the physical environment. Coping is our effort to manage adaptational demands and the emotions they generate. The flow of actions and reactions comprises interpersonal exchanges among the participants in an encounter generating one or more emotions; this flow provides continuous feedback to both participants about the potential implications of the changes that are taking place between them. Furthermore, relational meaning concerns the significance (meaning) of what is happening in the person-environment relationship for the individual (Lazarus, 2006). Everyone observes the circumstances constructing meaning by his or her relationship with the environment. Therefore, depending on the observer's appraisal, a particular situation could be categorized as stressful or not. Lazarus's theory of stress states that a person experiences stress when they perceive that the demands of a situation exceed the personal and social resources they can mobilize (Lazarus, 2000, 2001). Coping strategies suggest reappraisal processes of the experienced emotion and the judgments of the events or the troubled relationship with the environment. In other words, coping is seeking the most serviceable meaning available in an encounter and acting on it. It involves supporting realistic

actions while allowing the person to view the encounter in the most favorable way possible. The appraisal process shapes the discrete emotions generated (Scherer, 2019). Lazarus and Folkman's Transactional Model of Stress and Coping asserts that coping processes mediate the relationships between stress and outcomes, including personal and social resources and the coping strategies and reappraisals required to regulate stress. Critical components of this model include primary and secondary appraisals of stress and available resources that inform emotion and problem-focused coping strategies. This framework integrates experiences, resources, and coping styles and is adequate and valuable to underpin both research questions. In Figure 1, the appraisal process begins when an individual assesses his or her welfare considering potential challenges, threats, harm, or loss; this primary appraisal constitutes the perceived stress. In a secondary appraisal, the availability of social and personal resources is evaluated and determines stress. A third step to overcome this stress is applying a coping strategy congruent to the challenge and the available resources. Finally, successful coping strategies and effective resource management allow a final reappraisal of the situation. All stages trigger a particular discrete emotion that guides the individual for further actions and reflections. Figure 1 presents the Lazarus & Folkman (1984) Transactional Model of Stress and Coping.

Figure 1

Lazarus and Folkman's Transactional Model of Stress and Coping (authors' elaboration)



Methods

The COVID-19 lockdown binds this exploratory study; the study examines the impact of the lockdown on international students (N=6) pursuing doctoral education in the School of Social Work at a University on the east coast of the U.S. The interviewees of this study had diverse cultural backgrounds, maturities in their academic processes, and levels of community integration (see Tables 1 and 2 for interviewees' demographics and profiles). This study took an exploratory approach because of the novel situation caused by the COVID-19 pandemic and the presence of unexplored areas that the study intended to examine.

Table 1
International Students' Demographics

Demographic Information	Cultural Background
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Current Residence	Gender	Age	Marital Status	Number of Dependents	Yearly Income	Ethnicity	Country of Origin	First Language	Religion
Mexico	Female	35	Married	1	Less than 10K	Latin American	Mexico	Spanish	None
Chile	Male	42	Married	1	20-29K	Latin American	Chile	Spanish	None
Chile	Male	35	Married	2	20-29K	Latin American	Chile	Spanish	Catholic
Chile	Female	51	Married	2	20-29K	Latin American	Chile	Spanish	Catholic
Boston	Male	35	Married	0	10-19K	Asian	Nepal	Nepali	Hindu
Boston	Female	28	Married	1	10-19K	Asian	India	Hindi	Catholic

Table 2*International Students' Profile*

Maturity in the PhD. program				Community Integration				
Interview week	Year In the program	Academic Status	Course Work	Current Job	Living Abroad	Living with Family	Other memberships or affiliations besides the University	More than One Specific Community Affiliations
1**	5	Candidate	Completed	Teacher	No	Yes	Yes	Yes
2	4	Candidate	Completed	Teacher	Yes*	Yes	Yes	Yes
3	4	Candidate	Completed	Freelance	Yes*	Yes	Yes	-

4	3	Student	Completed	Teacher	Yes*	Yes	Yes	Yes
5	2	Student	Ongoing	Full time Student	Yes	No	Yes	Yes
6	3	Candidate	Completed	Full time Student	Yes	No	No	No

* At the time of the interview these International Students just returned to their country of origin after 2 years of living in U.S.

** This student finished a paper to become a Ph.D. candidate under the quarantine

Research Design

The research is qualitative and cross-sectional. It uses a case study approach and design. The study analyzes data from six subunits at a single time. Six international doctoral students constitute subunits of analysis. All international doctoral students come from the School of Social Work from a single university. All doctoral students together and their university represent the unit of analysis. The research considers multiple data sources: field notes, interview transcripts, voice recordings, and video observations. Data was collected during the lockdown directly accessing interviewees in their homes—their natural settings (Creswell, 2009).

Data Collection

The researcher used an interview guide to conduct in-depth interviews. Using interviews allowed the collection of in-depth information on each participant's unique experience through active questioning. All interviews were conducted and recorded using an online video conference platform (Zoom) and lasted between 50 and 70 minutes. The first author conducted the interviews while he was an international doctoral student, enabling a climate of trust, empathy, and closeness. He also video recorded the interviews eliciting participants' narratives on their

experiences, including how participants coped under the lockdown due to the COVID-19 pandemic and sought their experiences on resources and strategies to cope with stress. The first author conducted four of these six interviews in Spanish since it was the participants' preferred language, and the interviewer was a native speaker of Spanish. Both authors transcribed the interviews verbatim and coded thematically following the principles of appraisal stress theory using a deductive approach to qualitative analysis. The study collected demographic data using an online questionnaire. All data was collected between May and June 2020.

Recruitment

The researchers invited international doctoral students to participate in the study voluntarily. They identified the interviewees through a nonprobability sampling technique (snowballing). They conducted an initial screening to assess whether the participant met all inclusion criteria. Inclusion criteria for participation in the study were (a) full-time international graduate student status; (b) 21 years or older; (c) access to a computer and internet; and (d) fluency in English or Spanish. The authors gave adequate information on the study to potential participants and obtained written informed consent from each participant. The University's Institutional Review Board approved this study (Approval Number: 20.257.01e), ensuring compliance with federal regulations to protect human subjects.

Study Sample

The sample comes from the Social Work doctoral students and has equal representation in terms of sex (50% female; 50% male); it has multicultural coverage from several countries of origin (Mexico, Chile, Nepal, and India) and two continents of the global south (Latin-American 67%, Asia 33%). All the interviewees reported being married and having a yearly income between 10,000 and 29,000; four of the six interviewees reported having children, and all six

mentioned that English was their second language. Tables 1 and 2 give the profiles and demographic information of the participants.

Data Analysis Procedure

The study used thematic analysis to examine the data, following six steps advised by Braun and Clarke (2006): becoming familiar with the data; generating initial codes; searching for themes; reviewing themes; defining themes; and writing up. The first author translated all the data from Spanish to English. Both researchers familiarized themselves with the data by listening to and reading the interview transcripts multiple times. The authors used Saldaña's (2009) coding methods for the thematic synthesis of interviews. They used the components of the Transactional Model of Stress and Coping to organize the initial coding framework. The authors independently coded each interview transcript to search for themes, guided by Lazarus and Folkman's Transactional Model of Stress and Coping. They discussed discrepancies in their coding and created a consensus code; the average intercoder reliability for all six interviews was 89%. Trustworthiness was also ensured through member checking: the respondents validated all excerpts used in the study. All interviewees agreed that the results were accurately represented and resonated with their experiences.

Results

The study aims to describe the experiences of international doctoral students during the coronavirus lockdown and identify and document which resources and coping strategies worked for them. Verbatim interview responses are highlighted in this section to ensure the authenticity of responses.

Overall Experiences of International Doctoral Students

According to Lazarus and Folkman's Stress Model, stressful experiences are triggered by

a challenge that produces harm, threat, or loss (Lazarus & Folkman, 1984). An obvious threat under the COVID-19 lockdown that mattered to the interviewees was people's health and lives. All interviewees expressed concerns regarding health and care for their families, as evident in the following excerpts:

The impact that has particularly stressed me implies the care of my son. I feel that the greatest costs of the pandemic are being paid by my son and by children in general. I have gone through moments of great guilt in seeing myself like this... *¡puta madre!* I want to be more with him. (Male, Latin American, 4th year Ph.D. student)

It was a lot of anxiety, a lot of fear, because I do not have a social support system here. I do not know how good my health insurance is. Therefore, if I get hospitalized, what will happen? I have no networks here. No social networks, no safety net financially as well here. Back home, I could always ask someone for money, and they could easily access me so they could transfer money to me easily or they could pay for something easily. Here, I do not know whom to ask for money. (Female, Asian, 3rd year Ph.D. student)

In addition to the threat of getting sick due to the coronavirus and its consequences, additional incremental stress factors are associated with the challenge of the lockdown itself, including worries about family members getting sick, increasing days in confinement, restricted physical activities, lack of access to friends and family, travel restrictions, delay in academic work and overall uncertainties. Such conditions can undermine the ability to focus and function adequately to meet the intellectual demands of any doctoral program. For instance, one interviewee mentioned:

A lot of my supervisors are now assuming that I have a lot of time and I should be very productive because I'm at home. However, the truth is that because there is this constant stress level, because of COVID, I do not feel like working. (...) I am barely working one hour, two hours a day. I'm very distracted. I have never been this distracted in the whole program. (Female, Asian, 3rd year Ph.D. student)

Another example of setbacks and stress came from a Latin American student studying homelessness. In his case, fieldwork during a pandemic was dangerous and not suitable for the transition to an online format. Because of the circumstances, a paid project was canceled, making him unemployed too. He expresses his frustration in the excerpt below:

I see that everyone is losing their jobs and there is nowhere to find a job. This moment would have been ideal for me to sit down and write the thesis, write the results I had, but emotionally I did not have it in me, to be honest. I had time. However, my energy went to my children. [...] I am not depressed, but very discouraged. (Male, Latin American, 4th year Ph.D. student)

Another interesting finding is that layers of risk factors might build on each other. For example, with mandatory online classes, international students no longer had to live in the U.S.; suddenly, they needed to relocate with their families. However, traveling and moving during a lockdown put students under additional stress as well as at risk; this male student moved twice within three months:

I do not know if travel will be possible or not... because of the coronavirus situation, everything shifted online, uh, at least for sure, for the summer. Therefore, the plan is now that I will stay here [in a city different from the University's location] with my brother until I get a chance to fly home. I think the underlying

idea behind all these changes is not being alone, being with family, being, uh, celebrating your social relationships as much as possible. (Male, Asian, 2nd year Ph.D. student)

I have never been this distracted in my life. In addition, I do not know if this is because I am burned out, or because it is almost [my] fourth year. It could be that, it could be COVID, it could be a mixture of both. Therefore, it is like one layer on top. Burnout from the end of the program, to not having any social interaction, to the fear of COVID, not sleeping well. (Female, Asian, 3rd year Ph.D. student)

Paradoxically, for some of these international students, the lockdown also provided new unexpected conditions that impacted their priorities and roles. In several cases, these new conditions were a positive catalyst for their studies and academic work, as seen in excerpts below:

Without the pandemic, it would have never been feasible to do three interviews during one afternoon. I would tell you that it has been a tremendous, tremendous opportunity. (Male, Latin American, 4th year Ph.D. student)

Therefore, actually, having limited mobility and being locked down because of the coronavirus benefited my work in terms of studies. I was able to do a lot, and I was focused. I was very less distracted. I think that there was a lot of work that I could get done because of the lockdown. (Male, Asian, 2nd year Ph.D. student)

I am saving 6 hours of commute from my classes. Maybe another five hours, making eleven hours of commute that I managed to save because of food delivery services. I'm not sure if I would have followed the same pace, that is, if there had been no pandemic, if I could have finished this article. (Female, Latin American,

5th year Ph.D. student)

Effective Coping Strategies

The interviewees mentioned using various strategies to cope with the lockdown successfully. Among them were venting out, using humor, relaxing, engaging in distractions, actively solving problems by adjusting expectations, seeking support, and communicating with and helping family, friends, and the community, as seen in the excerpts below. I think the most important thing is communication.

I have spent maybe more time during the lockdown communicating with my family and friends than I would usually do. (Asian, 2nd year Ph.D. student).

I think [I am getting] a lot of support from the people staying in my house (.) We end up talking a lot in common areas. So, talking to them is a huge stress relief emotionally. In addition, currently, because it is warm here, we're also going out on the balcony and drinking. Therefore, we're trying our best to cope with the situation. Talking to people, friends, and family is very helpful. (Female, Asian, 3rd year Ph.D. student)

Every 15 days, I followed up with my therapist during the first month. Then, I had to stop, it was a money issue. I did not want that expense to rebound. I spoke with my therapist, he told me to talk to him whatever happens, obviously at no cost. In addition, I have two therapy groups online as well. (Latin-American, 5th year Ph.D. student)

Passing time, staying patient and talking. Talking shit, really. Yes, I have a friend over here who is good at talking. In addition, we complain together and sometimes a couple of those conversations are very soothing. Finding sort of a scapegoat.

(Latin-American, 4th year Ph.D. student)

Of course, I have had to increase my role in the house, that is, cooking. In addition, on the other hand, that has helped me. Now, all this role in the kitchen, for example, cooking, has been like a super important issue for us as a family

(Latin-American, 3rd year Ph.D. student).

All international students consistently refined coping strategies by adjusting expectations, adopting new roles, and changing plans. For example, two members of this study are also full-time primary caregivers and responsible for their children and family. They had to adjust their parenting roles with their educational requirements while at home during the lockdown.

At first, it was like a lot of fuss. However, later, the isolation and being away from commitments... allowed me to set my priorities. Therefore, I decided my priority is my daughter and enjoying my daughter, and my Ph.D. (Female, Latin American, 5th year Ph.D. student)

There are these additional roles that you have at home, when you have children or when you have to take care of the house. There is the education of children, which are additional roles that one had not contemplated. (Female, Latin American, 3rd year Ph.D. student)

Other students also experienced complementary roles to fit with family circumstances; for example, this student from Latin America traditionally worked alone at home, but his academic sanctuary was transformed to accommodate homeschooling and share household responsibilities with his wife:

Working from home is particularly comfortable for me, home is where I can write the most, I am not much of a library [person] or [like] being at the office. For me,

there was no dramatic change in my work and academic functioning, but there was an important change because my son stopped going to daycare, and my wife also stayed at home. That did have an impact since the three of us... We began to cohabit the space every day, 24/7, and of course that impacted my functioning...

(Male, Latin- American, 4th year Ph.D. student)

Table 3 Summarizes effective coping strategies reported by the interviewees. Adjusting expectations, prioritizing, being actively involved and close to family and the community are strategies that allow them to keep up with the lockdown in a reasonably good spirit.

Table 3

Effective Coping Strategies used by the Interviewees

Interviewee	Emotional Coping		Avoiding Coping		Problem Coping			
	Sense of Humor	Venting	Distracting	Relaxation	Adjusting Expectations	Seeking Support	Being in touch with family	Helping Others
1	Yes	Yes	Avoiding news	Playing, gardening, Drinking	Yes	Yes	Yes	Yes
2	Yes	Yes	Watching Series	Drinking	Yes	No	Yes	Yes
3	No	Yes	Playing	Family Games	Yes	Yes	Yes	Yes
4	Yes	No	Cooking Movies	Family dinners Walking	Yes	Yes	Yes	Yes
5	Yes	No	Movies	Smoking	Yes	Yes	Yes	Yes

6	Yes	Crying Talkin g to friends	Avoiding News	Drinking Chatting	No	Yes	Yes	Yes
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Effective Resources

Students identified the following personal resources as effective: practicing meditation, having a sense of humor, watching movies, pursuing hobbies such as gardening, taking care of pets, and engaging in physical and relaxing activities. For example:

I meditate regularly, like every day before breakfast. (...) And yeah, it has always helped me, um. In addition, because that has been helpful, I have incorporated it in my daily life and even in the corona situation, yes. It is always helpful. (Male, Asian, 2nd year Ph.D. student)

I meditate every day in the morning when I wake up at 8. I meditate in the afternoon. I try to block myself when I have intense meetings. I meditate for ten minutes and then another 10 minutes. Meditation and many television series. Many, eh! Play with my son, certainly. With my wife. I do not know, opening a bottle of wine, talking, watching a movie and things like that. (Male, Latin American, 4th year Ph.D. Student)

Using humor is definitely a little bit from my culture, not like, oh Lord. It has been very helpful. Therefore, watching any funny content is definitely useful. It is a useful resource. Therefore, yes, humor is definitely a useful resource. (Female, Asian, 3rd year Ph.D. student)

A resource commonly used by most international students to cope with stress was the use of

recreational substances such as tobacco or alcohol, as expressed in the excerpts below:

There were two or three weeks that I bought a bottle and poured a glass of wine daily. Now I have tequila. (Female, Latin American, 5th year Ph.D. student)

I think our consumption rate has increased; we do not get drunk, but every day I have a beer. (Male, Latin American, 4th year Ph.D. student)

Drinking yerba mate relaxes me. I no longer smoke. When I hang out with friends by Zoom, I sometimes have a couple of drinks, but no, no, I made a regular practice of having yerba-mate to relax. (Male, Latin American, 4th year Ph.D. student)

The study highlights those social resources that played a vital role in the well-being of these international students. All interviewees reported their engagement with networks of friends and family, and the internet and social media were essential communication resources. Support and flexibility from advisors, teachers, and university colleagues were crucial for the well-being of these international students. Finally, an interesting finding is the ability and willingness of the participants to support and help others. All interviewees could turn themselves into a resource for other vulnerable groups or friends. For them, social awareness was a practical component for actively coping with and reducing stress. By helping others, they were able to help themselves. For example:

I have dedicated myself to helping my inner circle...I also have helped a friend who is making some family baskets to deliver to people who are in need, although I am not part of the team that delivers. I have helped people who are helping [other] people. I am also a coach for people who are on the front line.
(Female, Latin American, 3rd year Ph.D. student)

1	Yes	Humor	No	Garden Petting	Spinning	Tequila Smokin g	Yes	Yes	Yes	Yes	Yes
2	No	Mantras as Meditate	No	Reading	Yoga	Beer	Yes	No	Yes	Yes	Yes
3	No	Venting	No	No	No	<i>Yerba Mate*</i>	Yes	-	Yes	Yes	Yes
4	No	MeditatePraying	Yes	Movies	Yoga	Smokin g Wine	Yes	-	Yes	Yes	Yes
5	No	Meditate	Yes	Movies	Walking	Smokin g	Yes	Yes	Yes	Yes	Yes
6	No	Humor	No	Cook	Body weight	Drinkin g Smokin g	Yes	No	Yes	No	Yes

* Yerba Mate is traditional tea with relaxing properties commonly used in South America.

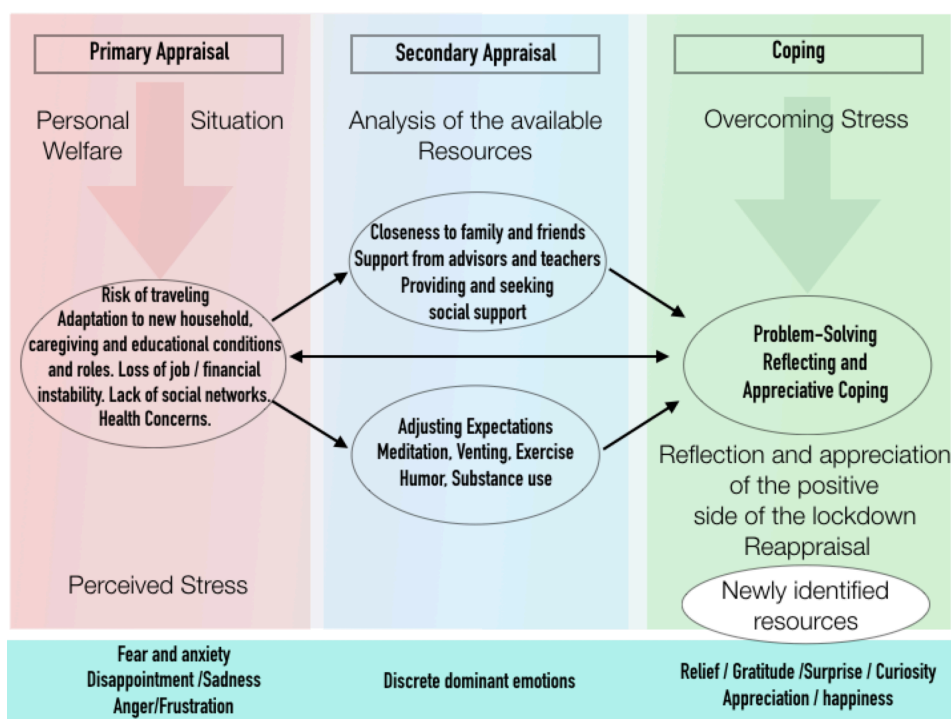
Discussion and Conclusions

This study reveals that the primary sources of stress that international students experienced were health concerns, the risks of traveling and relocating, and the loss of jobs, which impacts financial stability. These findings add to Sustarsic and Zhang's (2021) study of international students in the U.S. through COVID-19, highlighting that international students were affected by the unforeseen shift to online learning and travel restrictions. Other sources of stress aligned with risk factors well established in the literature included emotional demands and role conflict. Potential role conflict derived from a new household, caregiving, and educational conditions for all these students. Additionally, aligned with the literature (Chen, 1999; Mallinckrodt & Leong, 1992; Mechanic, 1962; Uchino & Birmingham, 2011), the results show that international students perceived the lack of social networks as a source of stress. The results

of this study are consistent with classic observations. For example, "Student's reaction to stress depended on the resources or coping mechanisms that the student possessed and where they were in the social network" (Mechanic, 1962, p. 27). This observation seems to capture the experiences of these six international doctoral students. Mechanic's notion of time and space is also very relevant in this study context. The lockdown experience abroad or in the home country can differ regarding roles and the emotional demands each student faces. These students had more robust social networks in their home countries; being integrated and part of a community was vital. Consistently, across this study's interviews, social awareness and social closeness seem to capture relevant meanings that could be associated with these students' well-being and the welfare of their loved ones. Most participants reported support from faculty members and advisors, congruent with Mallinckrodt and Leong's (1992) study on stress and social support for international graduate students. In the study, Mallinckrodt and Leong (1992) found that student–faculty relations directly affect psychological adjustment and buffer the effects of the impact of life's stressors. The findings are also congruent with El-Ghoroury et al.'s (2012) study, which discerned that social resources such as friends' support, family support, talking to a classmate, and personal resources such as regular exercise and hobbies were the major coping strategies. Figure 2 summarizes the main findings of the study, the experiences of the international students, and the effective coping mechanisms and resources they found compelling.

Figure 2

Findings Aligned to Lazarus and Folkman's Model of Stress



The primary appraisal in Figure 2 shows that welfare assessment by international students during the lockdown mainly comprised health concerns, risk of traveling, job loss and financial instability, adaptation to a new household, and educational and caregiving roles as the main challenges, threats, and loss that constitute perceived stress. These primary appraisals lead students to experience unpleasant and constricted discrete dominant emotions such as fear, anxiety, sadness, and anger. In a secondary appraisal, the recognition and evaluation of social resources such as closeness to family and friends; support from advisors, counselors, and teachers; seeking and providing social support; and personal resources such as adjusting expectations, meditation, venting, exercise, humor, and recreational substances were used to cope. Congruent with the challenge and the available resources, these international students applied problem solving, reflective coping, and appreciative coping as the main strategies to overcome stress. These successful coping strategies and effective resource management allowed

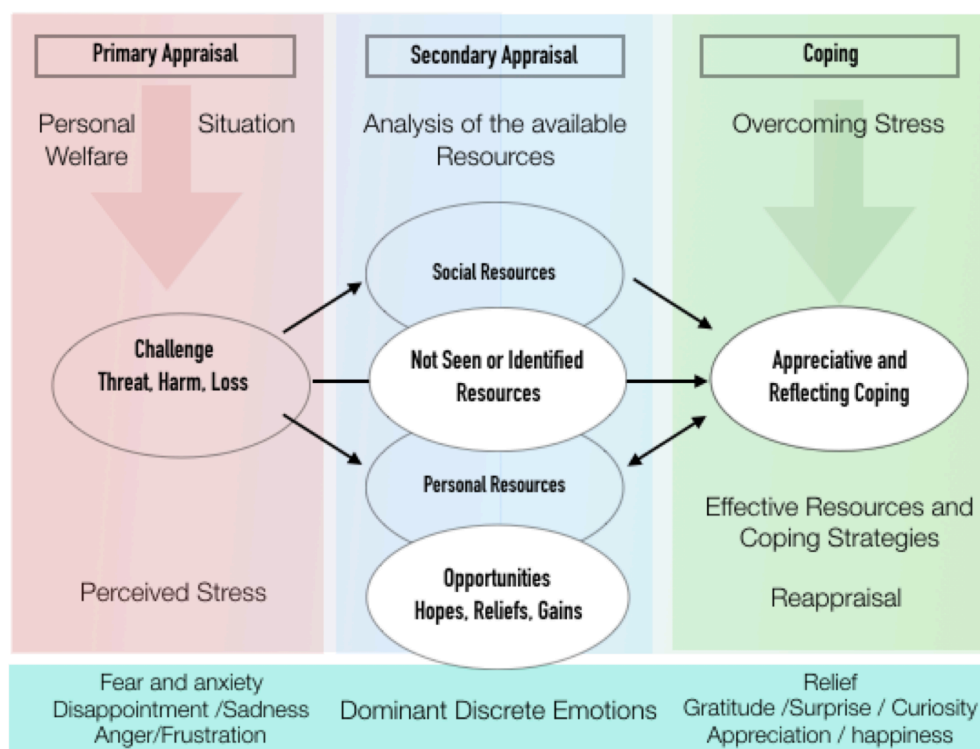
a final reappraisal of the situation. By showing appreciation and optimism, these international students could discover additional resources, such as online work, home delivery services, finding themselves at home with their loved ones, etc. Recognizing these new findings makes the students feel relief, gratitude, surprise, curiosity, appreciation, and happiness, all pleasant and expanding discrete emotions.

What is particularly effective for these international social work students is their ability to appreciate the lockdown's positive outcomes and unexpected consequences. They tended to observe positive relationships, stay flexible and optimistic even under hardship, and, more importantly, reflect on how new environmental changes might be helpful given the complexity they and their communities faced. We describe this particular coping style not found in the literature as appreciative coping. For instance, when these students faced role conflicts and emotional demands (Johannessen et al., 2013), appreciating the circumstances allowed them to be flexible. Flexibility is a fundamental trait that allows creativity. Creativity, in turn, leads to positive emotions and the ability of individuals to cope and reappraise their relationship with the environment. Creativity allowed these students to locate new resources at hand. For example, a female student from Asia expressed generally feeling isolated and without enough social networks. Suddenly, the lockdown allowed her to be close to her roommates and to experience relief. Similarly, another female student highly appreciated saving commute time by staying home and adding delivery services as a new asset. As the environment changes, individuals can observe opportunities and experience hope, a sense of relief, or even gain from these opportunities. Being open to opportunities means using a reflective coping style, which is described by Akhtar et al. (2019) as a problem-focused strategy that is the tendency to examine causal relationships, plan, and be systematic in the solution of the problems. These international

social work students went beyond being exclusively reflective from a cognitive perspective. They showed social and emotional awareness by demonstrating empathy and acting deliberately and purposefully. There is a better term to express their coping style than reflective coping, thus proposing the concept of appreciative coping. For us, appreciative coping is an opportunity-focused coping style. A mix of problem-focused and emotion-focused strategies in the tendency to observe positive relationships by being optimistic and flexible and building the ability to reflect on how new changes in the environment might help manage the complexities that individuals and communities face. The recursive nature of appreciative coping could allow the design of new models that capture broader emotional content derived from reappraisals that may lead to opportunities, hopes, release/relief, and gains. Figure 3 presents an Appreciative Coping Model; this model could integrate stress research into resilience research (Fraser et al., 1999). Akhtar & Kroener-Herwig (2019) highlight the importance of improving students' coping strategies as an efficient way to enhance their psychological well-being in academic/university and general life contexts (Akhtar & Kroener-Herwig, 2019). This study shows that appreciative and reflecting coping styles can be critical strategies for students' resilience and well-being. To extend this study, future research should consider focusing on (1) how adjusting expectations and changes in the environment under disruptive circumstances (such as a lockdown) might create opportunities and (2) how the presence of discrete emotions influences appraisal processes, specifically, how reflection, appreciation, and gratitude might influence the identification of resources and the emergence of expanding dominant discrete emotions.

Figure 3

Appreciative Coping Model Inspired by Lazarus and Folkman Transactional Stress Model



Conclusions

The data analysis revealed that all six participants reported stressful events with personal significance or meaning and described helpful resources and coping mechanisms to overcome stress. The peace of mind of the international students depended not only on the health of their family members, but their professional commitment also allowed them to be engaged in some social support mechanism; this was an essential aspect of their resilience (Fraser et al., 1999). The findings revealed that students' responses to the lockdown led to bifurcated consequences. Regarding the positive aspect, international doctoral students acknowledged the importance of self-care and family care. They adjusted their expectations, prioritized engagements, and adapted their plans accordingly. The lockdown provided unexpected conditions for some students to focus and excel academically. Additional household, child caregiving, and education roles required that students develop innovative coping practices by adjusting their expectations.

International doctoral students used meditation and mindfulness, therapy, gardening, exercise, board games, movies, occasional drinking and smoking, and social media to contact family and friends to deal with the lockdown. These students exhibited resilience and the ability to carry on with the circumstances. All of them were able to turn themselves into a resource for other students and vulnerable populations. On the negative side, students without solid community integration—while living abroad—experienced more significant uncertainties. The lack of family closeness and support, traveling, and moving concerns created additional sources of stress. Both groups experienced strong disrupted emotions, such as fear, sadness, frustration, and anxiety. Extended periods of confinement were a source of emotional exhaustion and stress. Furthermore, the findings highlight students' importance of social support and appreciative coping. Appreciative coping and social closeness—in times of physical distancing—were effective "stress antidotes." These findings align with appraisal stress theory, suggesting that a problematic relationship with the environment can be reappraised, in this case, predominantly through social reach. Social support can strengthen an individual's position against a stressor and reduce the threat level (Lazarus, 1996). We suggest that universities' advisors, counselors, and financial providers form an active part of the social support system for international students and provide adequate emotional and social support during crises based on students' individual needs and interests.

Implications

The study's particular resources and coping mechanisms that are effective in overcoming stress may provide helpful information for universities' psychology and counseling services. Interventions and programs focused on resilience and stress prevention could benefit from understanding the traits and characteristics of social work doctoral students evidenced in the

study and the appreciative coping strategy. The study reveals that health policies and programs that aim to prevent and treat stress and burnout and reduce attrition rates among international doctoral students should focus on the social environment. University programs that recruit and train international doctoral students should create programs to expand students' social networks in alignment with their interests and needs.

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CHAPTER III

A transformational game intervention focused on well-being: Building psychological resources to prevent stress and burnout

A transformational game intervention focused on well-being: Building psychological resources to prevent stress and burnout

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Abstract

This article aims to describe a novel intervention and provide an overview of its theoretical foundations. Animalia is a pilot program designed to increase personal and social

resources to cope with stress, prevent burnout, and increase well-being. Animalia is a self-liberating practice, presented as a serious game; it claims to build on an appreciative coping strategy to reconstitute and conserve well-being. The treatment has four components: (1) Emotional expression; (2) Emotional Readiness, a protocol to transform disruptive negative emotions into positive emotions; (3) Generative conversations; and (4) Metaphorical reasoning. The practice is focused on creating a safe space for appreciation, social awareness, reflexivity, and bottom-up emotional regulation. Animalia aims to facilitate emotional expression, vulnerability, and emotionally focused body work until it becomes a habit that builds bio-psychological resources. Since Animalia is a pilot program lacking empirical evidence, its claims are supported by a theory of change founded on cultural-biology, positive psychology, neuroscience, and an integrated framework of emotional theories presented in this paper as the Systemic Emotional Framework. This article can help social researchers, university student services, psychologists, and social workers understand a novel intervention, its theoretical literature, and its implications; as well as contribute to the well-being intervention literature to guide empirical research to evaluate the effectiveness and acceptance of the program.

Keywords: Coping; intervention research; positive emotions; serious games; social work; work engagement.

Introduction

This article aims to describe an intervention entitled Animalia in detail. Animalia is a pilot program designed to increase personal and social resources to cope with stress, prevent burnout, and increase well-being. To describe the Animalia intervention in-depth, this article is oriented around five major sections: *first*, I provide a narrative of the game's origins and inspirations; *second*, I lay out the core scientific and philosophical foundations of the game,

including a description of several key types of “serious games” and describe the field of serious games, specifically the category of transformational games; *third*, I present a brief review of stress interventions, specifically game-based interventions; *fourth* suggest the justification and integration of the choices of theories and frameworks applicable to understand, analyze, and *fifth* present a logic model to evaluate the Animalia program.

To present Animalia from an intervention perspective, I rely on the Template for Intervention Description and Replication Checklist by Hoffmann et al. (2014). This framework belongs to the intervention research literature and serves as a reliable criterion for how any intervention should be described in terms of its implementation. This article aims to propose a theory of change to evaluate Animalia, presenting the theoretical assumptions and propositions that support its outcomes. The article is organized into five sections. Section one describes the inspirations and developing process of the Animalia game intervention; section two describes Animalia’s scientific foundations and the theories that support its claims; section three explains the field of serious and transformational games and their relevance in mental health; section four presents the game’s four key components; finally, in section five I present theoretical assumptions and propositions, and a Theory of Change useful for understanding, explaining and evaluating Animalia.

Section One: The Iterative Development of Animalia

The Animalia game intervention was developed through a long and slow, reflective, and iterative process that took place over a decade and continues in its refinement. This creative and self-referenced exploratory process was developed through intuition and many inspirations that I got from philosophy and science, and mostly from basic trial and error.

Why is this intervention focused on stress and burnout prevention?

In 1994 I started my professional career in manufacturing as an industrial engineer, later I moved to advertising, which led me to design and into marketing. There is a motto if you work in manufacturing: To produce or die. Likewise, if you are in marketing, you either sell or die. Both disciplines led me to extreme demands and expectations. After 15 years of business practice, I was distressed, disappointed, confused, and tired. I wanted to retire from marketing and become either an artist or a scientist. However, I simply could not find a way out. My mind was constricted and alienated by productivism (Marcuse, 2006). Without a clear path in my life I became even more stressed, and I even got depressed. To free myself from my own burden in 2013, I studied cultural-biology and little by little I explored emotional expression in forms of experimental art and performance. Over the years I realized that stress was the consequence of a troubled relationship with myself. I learned that stress is a relational problem. From the individual perspective stress originates in an inner conversation, one that values the attachment to demands, expectations, assumptions, and judgment (Maturana et al., 2008); and that emerges when you want to belong and comply with a demanding and competitive social system. From the social perspective stress is a cultural, organizational, and a structural problem. Stress is cultural, since it originated in a conversation (Maturana & Davila 2008) that values production, competition, domination, control, exploitation, consumption, and infinite growth (Max-Neef, 1993). Stress becomes an organizational health problem when the demands of a productive system do not consider, neglect, or discard human emotions (Maslach, 2017). Stress operates on a structural level, since its origins are our postmodern culture and the consequence of a fear driven economy, catalyzed by marketing and media, whose focus is the manipulation of human desires or emotions to transform them into needs. The notion of needs nowadays can be

understood and lived on as an obligation to survive, in the confusion of natural needs and desires (self-care) with system requirements (care of the outer). Attachment and obligation toward need and requirements may lead to afflictive states of being, since they can operate as a negative anticipation of pain, which may trigger fear, and feeds the conversation that coordinates consumption-production, and stress. In an economy based exclusively on needs – one that neglects desires and utilizes human emotions – human stress fuels production and consumption, a negative feedback loop in the production-consumption-production system. When I entered the PhD. program to become a social worker, early on I found that in science there can also be a motto: To publish or die. Our postmodern culture nurtures values that lead to unsustainable lifestyles. During the fourth year of my PhD. I experienced emotional exhaustion, the antecedent of burnout. I noticed that I was not the only one. Many doctoral students were dealing with chronic stress. Some of my classmates from Mexico went through a psychiatric treatment and requested a leave of absence from the program. My experience was not so different. I found myself to be vulnerable and to the edge of my capacities during the Covid-19 pandemic. I needed more than a year to recover to get back into the PhD. program. To be congruent with my social welfare studies I dedicated myself to learning from my own stress experiences seeking to understand and contribute to social change as I discover that we, international graduate students, are indeed a vulnerable population.

Animalia's Origins and Inspirations:

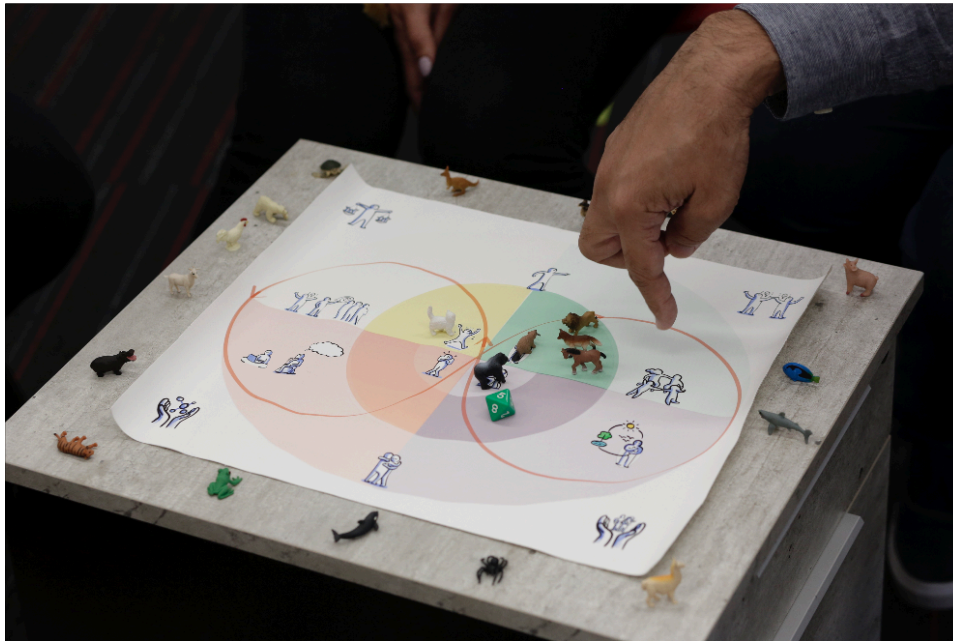
In 2009, I was leading in Mexicali, Mexico, a creativity lab focused on exploring methodologies and processes for social innovation. At the time, I wanted to understand how to create a working environment that nurtures creativity to solve social problems. This inquiry led me to study for a master's in cultural biology in 2013. When I finished the program in 2015, I

wanted to create a summary of what I had learned. To do so, I decided to draft an article; given the task's difficulty, the article shifted to creating a mental model.

My mental model operated as a dynamic prototype to tackle the complexities of social change and cultural transformation (Seel, 2020). I intended to create a social transformation “map” to guide conversations to overcome eco-social problems. The social transformation map was configured, presenting Humberto Maturana’s human existence domains: physiology, reflection, interaction, relationships, and the meta domains of human desires and ethics. The systemic map included the internal and external components of the human psyche, the intimate, individual, and implicit dimensions of feelings, intuition, imagination, spirituality, needs, etc., and the external, social, and explicit dimensions of our humanness, including essential fields for transformation such as co-creation, coordination, contribution, conservation, and principles such as the ethics of care (self-care, care of others, care of the outer), desirability and social justice. I designed a social transformation map to navigate the subtleties of feelings and emotions and facilitate people to move and shift accordingly to overcome internalized existential challenges. In 2019, a refinement and synthesis of this social transformation mental model became the layout of the Animalia board. Image 1 presents the Animalia board game.

Image 1

The Animalia Board Game



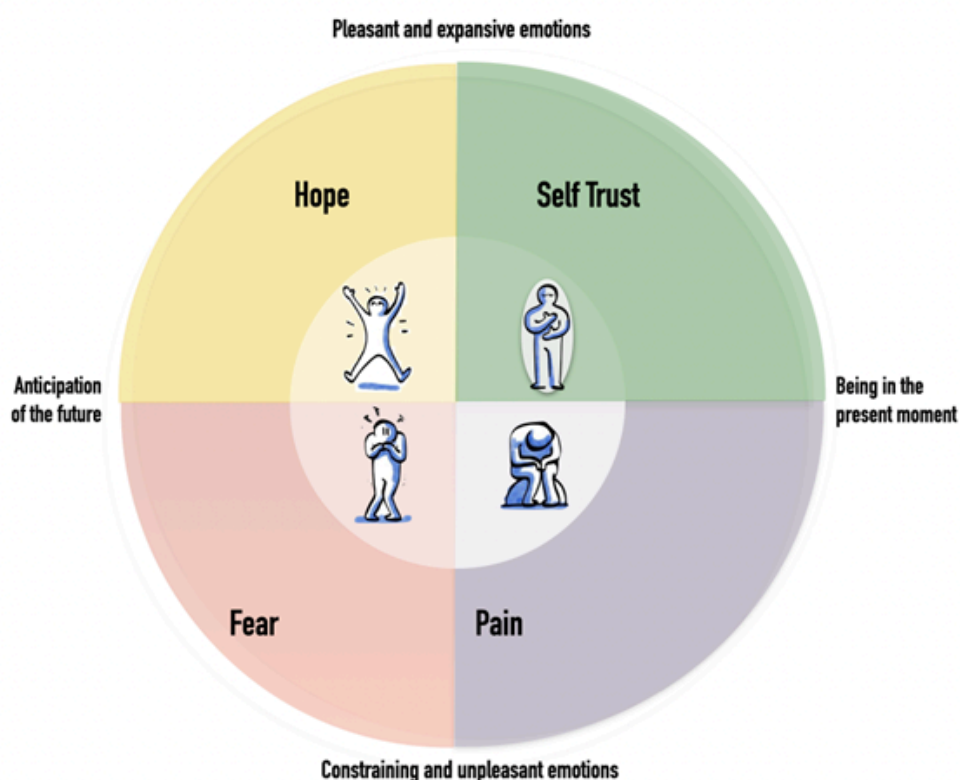
Scientific and Philosophical Foundations of Animalia

The second branch of inspiration for Animalia was a series of workshops that I conducted for my master's program between the years 2015 and 2019. The thesis, entitled “Epigenesis of Human Action, An Exploration of Emotional Patterns Associated with Needs and Desires” ignited the pursuit of a deeper personal inquiry that led me to my Ph.D. studies. These early studies had a pre-experimental component focused on the embodiment of people’s desires and needs, seeking to describe how appraisal patterns can lead to specific discrete emotions. To classify emotions, I created an emotional model inspired by Stoic philosophy. For stoics like Epicurus (270 BC), all emotions can be classified into four categories. (1) Joy for the present, (2) Fear for future events and illnesses, (3) Hope for the good that will come, and (4) Pain for the present illness. Inspired by this philosophy, I created a Neo-stoic emotional model with four quadrants: on the left side of the X axis, anticipation for the future; on the right side being in the present moment; on the top of the Y axis, pleasant and expansive emotions, and on the bottom

unpleasant and constraining emotions. The quadrants that come out of this axis are 1) Self-trust for the future (hope, enthusiasm, determination, etc.); 2) Self-trust in the present (content, curious, joy, love); 3) lack of self-trust for the future (Fear, Anxiety, Stress, worries, etc.); and 4) Constrained functionality in the present (Physical or emotional pain). Figure 1 presents the Neo Stoic emotional model.

Figure 1

Neo Stoic Emotional Model



The Development of Animalia's Game Board Prototype

By March 2019, I integrated the social transformation map with the Neo-stoic emotional model, including a game die and cards. Since I wanted the game to be universal, I used images instead of words so the players could interpret the board independently. The images reflected the

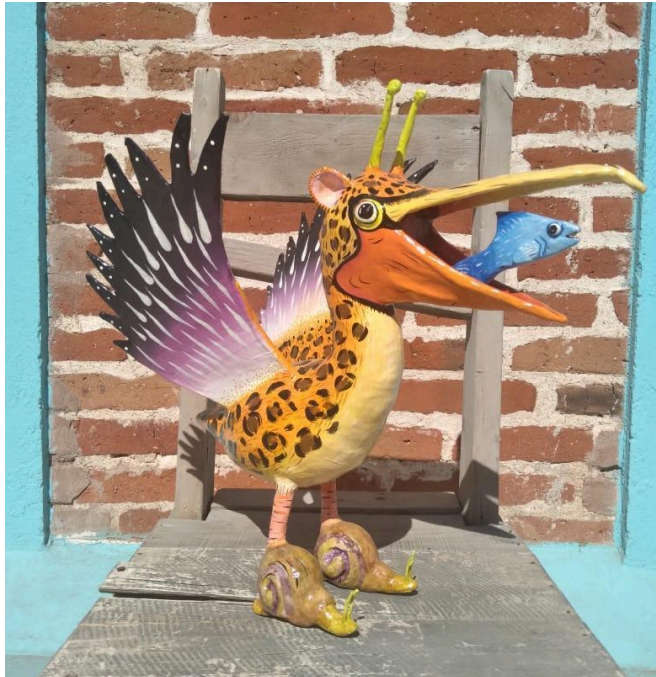
systemic map's domains, dimensions, and fields. A professional designer and friend from Chile, Luis "KB" Saavedra, was commissioned to create these universal images. Since the game needed tokens to represent the player's emotions. I integrated tiny, tridimensional animal figures. They were not only beautiful and compelling, they also worked as universal archetypes. I thought that by becoming animals, we may be on a path to recover our humanness. Hence the name Animalia, a Latin word used to describe the animal kingdom (Vocabulary, n.d.). After playing repeatedly, I firmly believed that aside from basic game instructions, players should not be directed on how to deal with their emotions; rather, they should be inspired by nature to own their emotions and unveil their humanness.

Animalia: An Intuitive Return to Ancient Wisdom

Animals are an intrinsic component of Mexico's Nahual culture. Nahual spirituality suggests that each person has a guiding and protective animal. The nahual is often seen as an alter ego or a spirit animal closely linked to a person's soul. It may appear in dreams or visions and provide guidance, wisdom, and protection (López, 1966). For example, Zapotec culture has a calendar with 20 animals, and each newborn was assigned two protective animals. In 1936 Pedro Linares, a 30-year-old artisan, became ill. During his delirious dreams he had the vision of fantastic Animals that protected him from his nightmares, e.g. A lion with the head of a dog; A Roster with the horns of a Bull. He decided to represent his vision through art crafts that were named Alebrijes (Chibnik, 2008). Alebrijes in Mexico is one of the most colorful and creative craft traditions. Image 2 presents my personal Alebrije, this figure represents my spiritual animals: jaguar, pelican, snail and fish. These animals had emerged during my life, and I recently integrated them due to my Animalia practice, inspiration and development.

Image 2

An Alebrije named Jagualicano: A Pelican with Jaguar Skin, two Snails as feet, shares Fish.



The Rationale for a Game Approach

Through the wellbeing workshops that I held from 2015-2019, I noticed that when I tried to introduce new ideas founded on Cultural-Biology, it was very common that some participants, often around one in four, showed resistance to the new knowledge. I concluded that well-being should be reconstituted spontaneously (Maturana, 2013) and that the facilitator's intervention and direction were not necessary. It became obvious to me that a traditional workshop was not the path to the self-liberation process that I was seeking to facilitate.

In January 2019, I attended a gamification retreat and decided to transform my experimental workshops into a game. I presented the first prototype to a group of gamification experts during the first international game camp in Latin America, held in Colinas de Cuncumén, Chile. During the same trip, I was invited as the main keynote speaker for a Gamification conference in Casa España, Santiago, Chile. I did two talks, one about the gamification of work

and the other about the gamification of education. My conclusion was that the emotion of play was lived the same way we engage with learning and work; there is no operational difference between play, work, and learning; the only thing that changes is the emotion that we might be experiencing when doing such actions (Maturana et al., 2017). When we seek and focus on an outcome, we live the present with effort, anticipating the future. The emotion of play occurs when we are fully engaged in the present moment regardless of the consequences of our actions (Maturana et al., 2017). Play is generally considered a natural way of human learning (Blanchard & Cheska, 1985; Huizinga, 1938). Therefore, it can be a pleasant, immersive, and a timeless experience. Learning and working can be playful activities, which was the solution for my workshops. Then I realized that playing was a key component of my joy for life and that it could be engaging for other people too.

Through 2019 and 2020, I continued testing my game prototype. I noticed that people are more easily engaged and willing to participate thoughtfully when playing. A game was an accessible way to present new concepts, especially new paradigms that challenged the dominant culture, such as needs and competition. During the 2020 COVID-19 pandemic, I was able to test the game online with the companionship of my colleague Rob Hartz, co-designer of the team-coaching protocols of the game. Together we held over 250 hours of game sessions with different university and corporate teams and with people from more than 25 cities around the world, including, Australia, South Africa, the U.K., Rumania, the Netherlands, Poland, Switzerland, Singapore, Mongolia, Philippines, Bangladesh, Nepal, Chile, Colombia, Peru, U.S., Canada and Mexico. We noticed that participants experienced a deep sense of human connection, agility, plasticity, and emotional readiness (Noor et al., 2008) regardless of their culture of origin and background. The Animalia game showed promising potential as a well-being treatment since

it is founded on shared human biology and the common challenges of living in the 21st century. Animalia was conceived as self-liberating practice for social transformation. At its core, Animalia is an intervention focused on emotional transformation to guide change, whether at the personal, organizational, or community level.

Section Two: The Theoretical Foundations of the Animalia Intervention

This section presents the choices of theories that will be useful to understand, explain, and guide empirical research to evaluate Animalia. Furthermore, it proposes an integration of the choices of theories to describe and explain emotional well-being and the underlying bio-psychosocial mechanisms of change that cause well-being included in the Animalia intervention. Below each theory is briefly described individually—see Table 1 for additional depth—and, in turn, an integration of these is articulated.

Table 1

Summary of the Emotion Theories, Assumptions and Propositions

Theory	Assumptions	Propositions
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Differential Emotions Theory builds from Systems Theory and Living Systems Theory.	Each emotion system and their interrelations with the cognitive system derive from four core processes: a) recursion among system elements, b) emergence of unique forms and patterns, c) consolidation of the forms over repetition and time, and d) constraints on system formation. Living systems are self-organized, self-referenced, and self-produced systems. They operate in a circular manner with hierarchy on their component's configurations. Parts of the system constitute a system of their own (e.g. a cell or an organ is a subsystem of the body). Components may not be reduced to the whole, since they have their own independent operational coherences and consequences.	Emotions operate as systems. Recursion describes reciprocal interactions among the elements of a system in the form of negative or positive feedback that affect the element interactions. Emergence concerns the generation of affective-cognitive structures from nonlinear recursive cycles. Emergent forms and patterns represent "Attractors" for the emotional system.
Appraisal and Social Appraisal Theory	Emotions are influenced by the appraisals of motive-incongruence, importance, agency, situational control, and problem- solving efficacy. Each distinct emotion is elicited and configured by a distinctive pattern of appraisal. Emotions are cognitions.	The interpretation of events rather than the events themselves causes emotions.
The broaden-and-build theory of positive emotions.	The main underlying assumption is that love within safe, close relationships sparks the urge for recurring cycles of joy, play, interest and exploration. Joy, interest / curiosity, contentment and love broaden an individual's momentary thought-action repertoire: joy sparks the urge to play, interest sparks the urge to explore, contentment sparks the urge to savor and integrate, and love sparks a recurring cycle of each of	Positive emotions broaden an individual's momentary thought-action repertoires. Positive emotions promote the discovery of novel and creative actions, ideas and social bonds, which in turn build that individual's personal resources, ranging from physical and intellectual resources

these urges within safe, close
relationships.

to social and
psychological resources.

A Succinct Overview of the Relevant Theories

The first theory of relevance is Appraisal Theory, which is sometimes referred to as Social Appraisal Theory. Appraisal theory comes from psychology and social psychology. According to appraisal theory, each distinct emotion is elicited and configured by a distinctive pattern of appraisal. The main proposition of this theory is that the interpretation of events—rather than events themselves—causes emotions. Emotions are influenced by the appraisals of motive-incongruence, importance, agency, situational control, and problem-solving efficacy (Lazarus, 2000). In Fridja's (1988) theory of emotions, an emotion is a change in readiness for action, which is motivated by our appraisal of an event or situation regarding our well-being. Lazarus' theory of stress states that stress is experienced when a person perceives that the demands exceed the personal and social resources the individual can mobilize. Coping strategies suggest reappraisal processes of both the experienced emotion and the judgments of the events or the troubled relationship with the environment (Lazarus, 1990). In other words, coping is the process of seeking the most serviceable meaning available in an encounter and acting on it. It involves supporting realistic actions (problem-focused coping) while also permitting the person to view the encounter in the most favorable way possible (emotion-focused coping) (Lazarus, 1990).

Frederickson's (2001) Broaden-and-Build Theory of Positive Emotions is the second relevant theory. This theory underscores how positive emotions are essential elements of optimal functioning and, therefore, an essential topic within the science of well-being (Diener, 1991;

Fredrickson (2001); Seligman & Csikszentmihalyi, 2000). The theory suggests that positive emotions (i) broaden people's attention and thinking, (ii) undo lingering negative emotional arousal, (iii) fuel psychological resilience, (iv) build consequential personal resources, (v) trigger upward spirals towards greater well-being in the future; and (vi) seed human flourishing. The theory proposes that people should cultivate positive emotions in their own lives and the lives of those around them, not just because doing so makes them feel good at the moment but also because doing so transforms people for the better and sets them on a path towards flourishing and healthy longevity (Fredrickson, 2001).

The third relevant theory is Izard's (1972) Differential Emotions Theory. A core principle of differential emotions theory is that emotions operate as systems. Emotions are a constitutive feature of all living systems and fundamental to their evolutionary adaptation. An emotion is a complex system that emerges from interactions of constituent neurohormonal, motoric, and experiential processes (Izard et al., 2000). Discrete emotions co-assemble with others to form contingent emotion patterns that stabilize over repetitions and time. Emotions constitute a complex adaptive system, and the parts that make them are systems in their own right (Dimitrov, 2003). The systems are self-organizing in the sense that recursive interactions among component processes generate emergent properties (Izard et al., 2000).

An Integration of the Relevant Theories: The Systemic Emotional Framework

Drawing from these three relevant theories, I propose a comprehensive systemic emotional framework. This framework highlights the intricate relationship between biological, individual, social, and cultural factors in emotional well-being. It underscores the significance of comprehending how individuals assess and react to stressful events and the role of positive emotions in fostering resilience and well-being (King, 2023).

The key principles of this integrated framework are as follows:

Consistent with Appraisal Theory, appraisal processes are influenced by both individual and cultural factors. People evaluate events based on personal experiences, values, goals, cultural norms, and expectations. Along these same lines, social appraisal processes are particularly relevant in stressful situations where social comparison and evaluation are prominent. For instance, individuals may experience stress if they perceive that they are not meeting others' expectations or believe that others are coping better. Rooted in an evolutionary framework (Izard, 1972), we posit that emotions are evolved responses that serve adaptive functions, such as preparing us to respond to threats or opportunities. Stressful events can elicit a range of intense emotions, including fear, anger, sadness, and anxiety. Critically and in keeping with Frederickson (2001), we posit that positive emotions, such as gratitude, joy, and awe, can counteract the detrimental effects of stress. Positive emotions broaden our attention and cognitive processes, thereby aiding in the development of personal resources and resilience over time. The adaptive nature of emotions implies that all emotions are equally valid, as each serves a purpose in navigating specific situations by facilitating thought and bodily responses. From an evolutionary standpoint, distinct emotions enable us to focus and engage in behaviors that preserve our well-being and enhance our chances of survival (King, 2023). While peace is not classified as an emotion, it represents a state of serenity that comes with accepting and acting coherently with the circumstances. Peace serves as a fundamental state of being and forms the foundation for cultivating emotional resources and the basis for developing emotional resilience, both personally and socially (King, 2023). Drawing from Izard et al. (2000), we posit that inadequate responses to high-stress situations and a tendency towards negative emotions contribute to the repetition and reinforcement of maladaptive emotion, cognition, and action patterns. "Emotional

agility refers to the ability to adapt one's emotions and thoughts in response to changing situational demands" (Kashdan & Rottenberg, 2010, p.1). It involves recognizing and accepting one's emotions while aligning one's actions with personal values and goals. Stress and emotional agility have biological, personal, social, and cultural factors that contribute to their occurrence. These phenomena can be understood and measured by examining emotional systems and how biology, social appraisals, beliefs, values, and culture shape the patterns of thought that influence our well-being (Sanchez King, 2023).

This comprehensive emotional transformation framework has guided research and development and helped design facilitation principles for organizing and implementing the Animalia game as a deep human transformational experience.

Section Three: Serious Games as a Mode of Transformation

Animalia is a serious, transformational game that uses a modern game design with principles and practices that fit in the exergame, relational, empathy, non-competitive, infinite, and health game categories. Below, I situate this assertion within the broader literature on serious, transformational, and mental health games.

Defining Serious and Goal-Oriented Games

Serious games are designed to educate, train, or change behavior as they entertain players. The primary purposes of serious games can be but are not limited to, education, training, and health improvement. Studies have shown that serious games are an engaging, motivating, and effective way to treat stress (Eichenberg et al., 2017; Ming Lao et al., 2017). Serious games can be non-digital; however, most serious games in the peer-reviewed literature are delivered online or *via* stand-alone computer technology (Lau et al., 2020). Game genres can be classified as goal-oriented, problem-solving, cognition training, and so-called exergames. Exergames

combine physical exercises with game elements (Lau et al., 2020), such as the case of Animalia's bottom-up emotional regulation technique implemented when participants embody, perform, and roleplay as their chosen animals. Goal-oriented games focus on tasks and the end results of those tasks. Problem-solving games challenge players to find solutions to problems. Cognition training games train the players' working memories through similar brief challenges that usually have to be tackled within time constraints (Lau et al., 2020). Animalia does not fit into these categories; Animalia is a relational game, meaning that the goal of the game is to interact with and build social bonds with other players, focusing less on game mechanics and more on storytelling centered around evoking an emotional response in players—it is an empathy game. Animalia is the opposite of a competitive game; competition is an antisocial emotion; since the attention is focused on winning, other people are denied, and they become relevant only if they lose (Maturana, 1996). Animalia seeks to build social awareness and support. Animalia is also an infinite game. In finite games, there are only winners and losers; in infinite games, the idea is to sustain relationships to keep the game going (Carse, 2013), such as the continuing nature of life and community. In this article, I also present Animalia as a game for health aimed at improving health-related behaviors and outcomes, but above all, a transformational game.

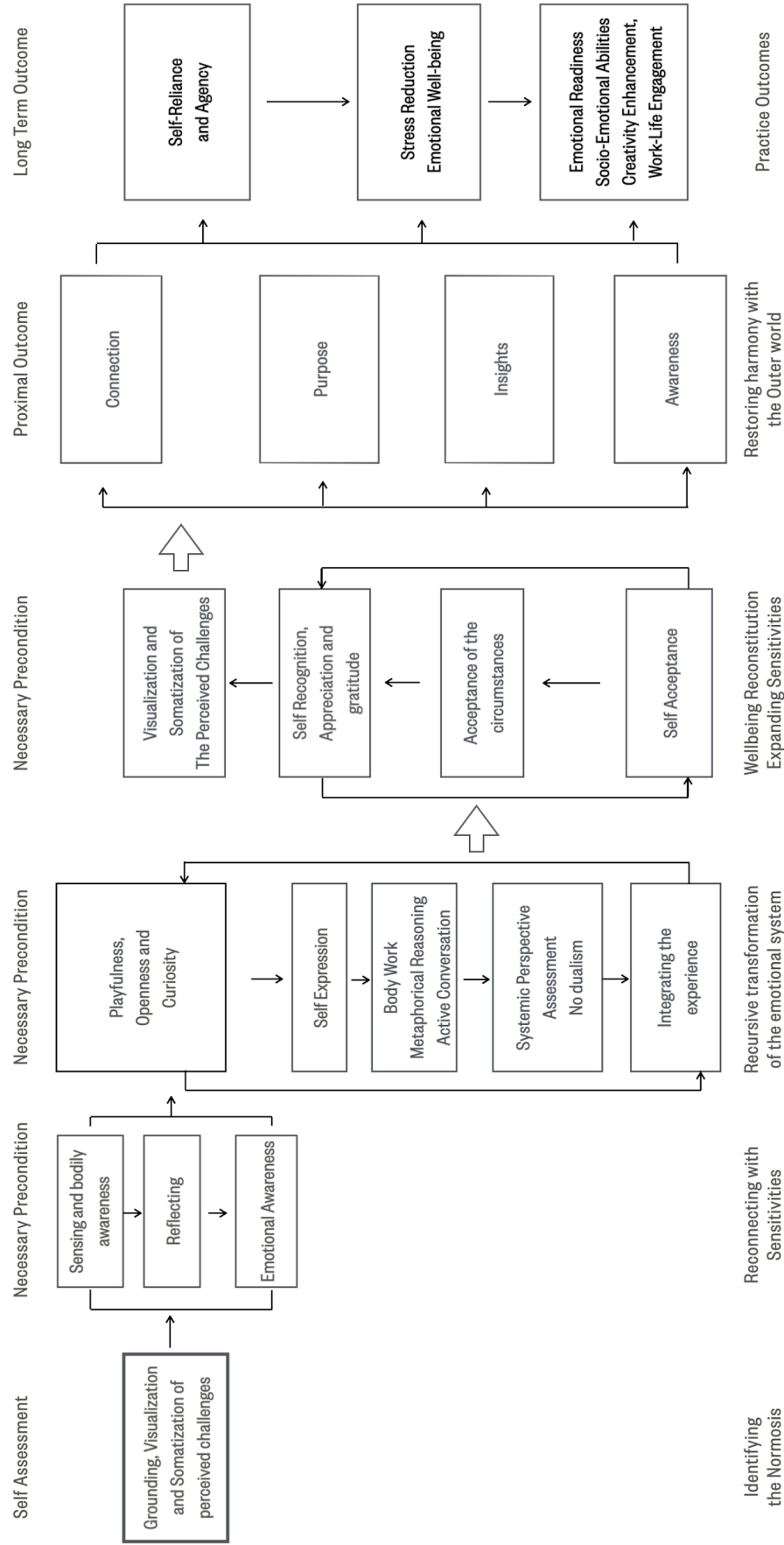
Serious Games as Transformational

The application of game design approaches has gained popularity in healthcare to create more engaging interventions, change real-world behaviors, and subsequently impact therapeutic outcomes (Gauthier et al., 2019). Games stimulate learning through immersion flow, and meeting individual's needs concerning mastery, fantasy, challenge, and connectedness (Boyle et al., 2012). The use of board games has been growing in the past years in education, research, and mental health attendance (Vita-Barrul, 2022). One of the great advantages of using a board game

is its ability to facilitate face-to-face interactions with peers, tutors, family members, or even a therapist (Gauthier et al., 2019). Board games are characterized by presenting a fixed set of rules that limit the number of pieces on a board, the number of positions for such pieces, and the number of possible moves. In contrast modern board games are more aesthetic and are designed with more innovative and varied mechanisms than traditional board games. Modern board games benefit certain psychological processes by enhancing brain activity (Vita-Barrul, 2022). Recent studies have shown that cognitive interventions based on modern board games effectively maintain cognitive health in older people (Vita-Barrul, 2022). Studies have shown that modern board games may also be useful in decreasing psychopathological symptoms and improving social functioning in psychiatric patients (Piñon-Blanco et al., 2020).

Transformational games are those developed to transform players in a specific way that transfers and persists beyond the game (Culyba, 2018). Transformational games aim for the player to demonstrate behavioral changes outside the game context. Therefore, the aim is to create a trans-gamification experience. Likewise, if the player exhibits a change while still engaging with the game, but these changes disappear once the game experience ends, then the game has not succeeded. The goal is to transform the player, not depend on the player continuing to play the game. When players are aware and can feel the benefits of the change, they seek to change willingly and purposefully; well-being is preserved spontaneously (Maturana, 2013). Acting deliberately on change is a self-transformation process that could become a practice. At its core, Animalia is a self-liberation practice. On figure 2 on page 96 I present Animalia's Self-Liberation Theory of Change (elaborated by the author).

Animalia's Self-Liberation Theory of Change



Section Four: Animalia Game Key Components

The Animalia framework has four intertwined main components that operate concurrently and sometimes simultaneously: 1) Emotional Expression, 2) Metaphorical Reasoning, 3) Generative Conversations, and 4) Emotional readiness driven by appreciative coping, a recursive and spontaneous process where participants unravel constraining negative emotions and transforms them into positive emotions. They constitute a practice that might sustain positive emotions and well-being until it becomes a habit and a psychological resource.

Emotional Expression: Gaining a New Perspective

Animalia's players have three ways to express their emotions through the animal(s) that they selected during the game to represent them: a) create a drawing; b) act and embody the animal, performing its position, sound, and motion; and c) storytelling, a brief imaginary narrative. The three activities are suggested during the game, and voluntarily, the player can select one of them and set the tone for the round so that other players also express their emotions in the same way. After completing the activity, players are encouraged to share their experiences and comments. Emotional expression sets the tone for metaphorical reasoning and the generative conversation components that will evolve during the game.

Metaphorical Reasoning: A Gentle Way to Understand Complexity

The Animalia process is supported through metaphorical reasoning to overcome self-judgment, self-demands, self-assumptions, and self-expectations while expressing emotions. At its core, metaphorical reasoning refers to identifying previously overlooked or unnoticed similarities between two apparently unrelated ideas (Casakin, 2013). For example, an emotional experience associated with the characteristics of an Animal, or a particular Animal might be useful as a role model or an alter ego. Hence, it may be an accurate representation of Self. The

system of relationships obtained from the Animal source is transferred to the circumstance at hand, allowing a novel perspective to be applied and developed as an absolution, a dissolution, a solution, or a resolution. The vague nature of metaphors enables a unique type of reasoning that permits exploring unknown ideas and establishing novel relations with unrelated ideas (Casakin, 2013).

Generative Conversations: A Creative Way to Meet Common Desires

Maturana (2013) argues that there is a fundamental difference between dialogue and conversations. Dialogue invites the confrontation of ideas and is fundamentally a cognitive act to present and judge one or more ideas in order to synthesize or drive to a conclusion, such as Plato's dialectics (Benson, n.d.). Conversations, on the other hand, are driven by emotions; a conversation is an emotional dance. During conversations, it does not matter whether to be right or wrong because what is important is not the idea; it is the story, the background; conversations are guided by curiosity and care about why someone feels a certain way. The conversation is about validation and respect. In this context, generative conversations mean that players engage spontaneously in a process where curiosity, possibilities, and desires nurture their story (driven by their animals), fundamentally the desire for well-being (Sánchez King et al., 2016). Generative is the quality of a conversation that unravels and transforms challenging situations to get clarity and, overall, a new perspective to adjust expectations and discover new possibilities and resources to cope with life and stress (Sanchez King, 2023).

Appreciative Attitude as a Path for Sustained Transformation.

Appreciative coping is an opportunity-focused coping style. It involves emotional awareness and reflection to observe positive emerging relationships during hardship moments. Instead of focusing on threats, potential loss, or harm, the appreciative coping approach suggests

focusing on the opportunities, gains, and detachment for release/relief that could be emerging from new, challenging contexts. It requires being optimistic, flexible, and open to discover how stressful new environmental changes might be transformed into an opportunity (Sanchez King et al., 2022).

Section Five: Animalia's Biological Foundations

Flowing forth from Animalia's main components, the intervention's bio-socio-cultural mechanisms of change are rooted in several core assumptions and consequent propositions articulated below. The majority of these assumptions are founded on cultural-biology and the recognition that all living systems are self-referenced, self-generative, and spontaneously conserve well-being (Maturana, 2015).

Recognizing Our Human Nature

Human beings are historical, relational, emotional, and social beings. Our constitutive nature operates as a unity of body, language and emotions structurally coupled with the environment (Maturana et al., 1970). To make sense of the world we use language. To guide ourselves and navigate the world we sense and interpret emotions. The awareness of being biological, social and psychological being, with a constitutive integration of body, emotions, and language, can nurture and develop personal intuition.

Recognizing Our Postmodern Culture

Due to the dominance of a cartesian mindset that influences our postmodern culture, people tend to separate mind and body, and live under the illusion that our mind operates separately from the body. Unaware that we are a biological unity with the earth, we, as observers, make an arbitrary assumption of separateness. From this fragmented perspective, emotions are also denied and neglected. The influence of ancient Greek philosophy in our postmodern culture

leads us also to assume that we are exclusively rational beings or Homo Sapiens Sapiens, and most of the time emotions are neglected as they might be considered impertinent, as if they alienate reason. However, we are always in some sort of emotion, even when we are reasoning or when we say that we are controlling our emotions (Maturana, 2013). Our postmodern society is also habituated to productivism and working environments that value competition that may lead to auto imposed demands in order to “win or succeed”. Demanding workloads founded on productivism may lead to self-demands and self-expectations that are internalized as an inner narrative that can stand in the way of well-being. Thoughts can often contain self-judgment, distortions and exaggeration, leading to unpleasantness and affliction and ultimately to disruptive emotions.

Art and Emotional Expression as Means for Transformation.

By adopting animal metaphors and changing the inner narratives people can guide their thoughts and actions into useful emotions to transform themselves. Well-being is spontaneous, and emotional expression brings people to experience the present moment. Art as it expands the sense of belonging can help people acquire a new perspective; artistic expression allows the temporary suspension of self-expectations, self-judgements, self-assumptions, and self-demands. This reconstitutes spontaneous well-being.

Animals as Guiding Archetypes

Animals are strong archetypes that can help people to obtain a nonjudgmental perspective. An emergent narrative inspired on animal metaphors can sustain a transformational process founded on curiosity, discovery and play. When people experience well-being after adopting a new narrative, they are naturally drawn to conserve the narrative and explore the adoption of new behaviors. Sustained change may occur through the conservation of a

compassionate and appreciative inner narrative. This narrative can emerge through the compelling characteristics of animals we feel attracted or intrigued by, and an appreciative attitude. Table 2 summarizes the Animalia intervention using the Template for Intervention Description and Replication Checklist by Hoffmann et al. (2014).

Table 2

Summary of the Animalia Intervention Using the Template for Intervention Description and Replication Checklist by Hoffmann et al. (2014)

1. BRIEF NAME: Provide the name or a phrase that describes the intervention.	The intervention, entitled Animalia, is a transformational game that aims to build socio-psychological resources to cope with stress, sustain and increase well-being.
2. WHY: Describe any rationale, theory, or goal of the elements essential to the intervention.	The Animalia intervention recognizes that all human beings are historical, relational, emotional, and immersed in language. It is founded on the notion that well-being is spontaneous and that through emotional expression, reflection, and generative conversations, people can re-constitute any problematic relationship they may have with the environment. Furthermore, since we are languaging beings, inner narratives expand or constrain people's thought and action repertoire. Narratives are key to understanding how appraisal patterns could be used to deconstruct negative emotions and transform them into positive emotions. Animalia also enhances the practice of bottom-up emotional regulation to drive positive emotions and appreciation and acceptance that will lead to sustained well-being. Animalia's approach is aligned with the "broaden and build theory of positive emotions" (Fredrickson, 2001) and the 'plasticity of well-being framework' (Dahl et al., 2020), where insights, awareness, connectedness, and purpose are the key mechanisms of wellbeing. The practice of Animalia leads to adaptive coping skills such as reflexive and appreciative coping (Sanchez King & Dahal, 2021) and enhances bottom-up emotional regulation processes that lead to spontaneous well-being.

Animalia is presented as a game. During the game, trained facilitators guide participants to observe, reflect, and act on their emotions. The materials used during the intervention are a board game, tokens, cards, game dies, paper, and color markers. When participants voluntarily are engaged in a game, they find themselves in an emotional state of curiosity, and trust both the process, other players, and the environment. Before the game starts, the first step is to generate a safe space; all players are asked to respect and honor what will be shared during the game session. The goal is to engage and to ensure players' privacy and confidentiality. Sessions start with an introduction to the game, the setting of the board, and all the materials. The first item of the game is to bring body and emotional awareness forward through a guided visualization, and the procedure continues so that players actively discover an animal that will represent their current state of being and the challenges they might be facing in their lives. By consensus, the players agree to play themes that resonate with the participants' challenges. Rounds of the game consist of discovering the player's guiding animals, throwing the die, and reflecting and acting on different themes previously agreed.

3/4. WHAT: Materials and procedures.

Players get inspiration from their animals and participate in emotional expression through journaling, drawing, storytelling, and bodywork. Players can participate individually and in group exercises. The main goal is for participants to share experiences and insights through role-playing and learn more about each other. Each game session could range from one hour to several hours depending on the number of players. Sessions start with introducing the game, setting the board, and all the materials. The first item of the game is to bring body and emotional awareness forward through a guided visualization, and the procedure continues so that players actively discover an animal that will represent their current state of being and the challenges they might be facing in their lives. By consensus, the players agree to play themes that resonate with the participants' challenges. Rounds of the game consist of discovering the player's guiding animals, throwing the die, and reflecting and acting on different themes previously agreed upon. Players get inspiration from their animals and participate in emotional expression through journaling, drawing, storytelling, and bodywork. Players can participate individually and in group exercises. The main goal is for participants to share experiences and insights through role-playing and learn more about each other. Each game session could range from one hour to three hours.

- 5. WHO PROVIDES:** Describe the expertise, background, and specific training given to each category of intervention provider. A facilitator leads visualization, mindfulness, and bodywork for all the experiential activities, and an assistant performs the pretest and posttests. The facilitator could have a background in psychology, social work, or coaching and sufficient experience in group interventions. The assistant should be familiar with surveys, remote work tools, and statistical software and hardware.
- 6. HOW:** Describe the modes of delivery of the intervention. The intervention can be delivered in person or online with some limitations using video conference software.
- 7. WHERE:** Describe the type(s) of location(s) where the intervention may occur. The Animalia game intervention can be conducted in any private space, with a table and chairs, enough space for bodywork, and a Wi-Fi connection. The only requirement is that the game be held in a safe and confidential space, whether online or in person. The game could also be played online in the comfort of players' homes.

Conclusions

In this article, I described and explained the Animalia intervention's origins, inspirations, and philosophical and scientific foundations. To contextualize Animalia as a health game, I presented a typology of serious games and concluded that Animalia is a serious, transformational, non-competitive, infinite exergame founded on relationships and empathy. I justified the choices of theories useful to evaluate Animalia and presented key concepts and theories from the fields of biology, psychology and social psychology, positive psychology, living systems theory, and neuroscience to understand and explain Animalia's reach. In this process, I proposed an integrated bio-psycho-social framework and supported its design through the assimilation and combination of evidence in the form of previously developed research, concepts, and theories (Hirschheim, 2008). I reviewed and described the Animalia intervention in detail using the authors' procedures and the Intervention Description and Replication Checklist Template (Hoffmann et al., 2014). Finally, I presented a Self-Liberation theory of change detailing a list of assumptions and propositions to clarify the authors' positionality and clarify the

claims and warrants of Animalia so that the intervention can be adequately understood, measured, and evaluated.

The concepts and theoretical frameworks presented in this paper are a comprehensive approach to evaluating Animalia and its impact on well-being. One important distinction of this intervention is its voluntary participation through a game. Qualitative and quantitative studies should be conducted to help establish a foundation for the efficacy and potential impact of Animalia. Future research should be focused on (a) documenting the experiences of Animalia's practitioners seeking to understand how metaphorical reasoning influences the experience of stress and wellbeing and (b) the evaluation of Animalia, considering two questions that should be answered: 1) Are there any changes on emotional exhaustion, stress, and work engagement after experiencing the intervention? If so, for how long can these changes be sustained? 2) What is the feasibility and acceptability of Animalia? These preliminary studies can illuminate how to refine the interventions and learn how Animalia can be adapted for broader audiences and replicated successfully, without losing fidelity.

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CHAPTER IV

The evaluation of a transformational game intervention to prevent stress: A pre-experimental pilot study of positive emotions coping.

The evaluation of a transformational game intervention to prevent stress: A pre-experimental pilot study of positive emotions coping.

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Abstract

Background. The World Health Organization (2020) states chronic work stress and burnout are two silent epidemics. Despite the salience of stress and burnout in the lives of people in today's world, little attention has been paid to understanding the systemic causes of chronic stress and helping individuals to recover from and prevent emotional exhaustion, the antecedent of burnout. **Method.** The present pre-experimental study (N = 17) evaluates a pilot intervention designed to build psychological resources on full-time international graduate students, a population consistently affected by stress and burnout. A pretest/posttest single treatment

pre-experimental design was used to test whether playing Animalia, an emotional expression game, improves well-being through deconstructing and transforming unpleasant and constraining emotions into pleasant and expanding emotions. **Results.** After the Animalia intervention, Perceived Stress (PS) levels decreased, Work Engagement levels, and Personal Accomplishment levels increased. **Conclusion.** This experimental test of the Animalia game showed promising outcomes and supports the utility of conducting a fully powered randomized control trial with longer-term follow-up.

Keywords: Burnout; Coping; Emotions; Transformational games; Social Work; Work Engagement

Introduction

International graduate students experience greater emotional demands, higher levels of discrimination, and homesickness than students from host countries (Kristiana et al., 2022). Historically, this population has suffered high levels of stress, making it an often unattended and vulnerable population (World Health Organization [WHO], 2020). Chronic stress is known to cause burnout, anxiety, depression, and the deterioration of physical and mental health. According to a survey project about students' mental health from the WHO (2018), generalized anxiety was highly prevalent in students across countries, with roughly one in three students screening positive for anxiety. Similarly, recent evidence suggests that nearly one in three international students reports elevated anxiety symptoms (Wang et al., 2023). The mental health of international graduate students is an important issue. However, research on international graduate students' stress has not been explored enough and needs attention, especially given the profound changes in working and learning environments in today's post-pandemic world.

According to the United Nations Educational, Scientific and Cultural Organization's

definition of international students, they are “students who have crossed a national or territorial border for the purpose of education and are now enrolled outside their country of origin.” Evidence suggests that international students experience more intense stress than their fellow domestic students (Groenvynck et al., 2013), and often experience unique stressors related to coping with cultural differences (Heggins & Jackson, 2003; Rahman & Rollock, 2004; Schmitt et al., 2003). Stressors closely associated with international students fall into two categories: stressors related to the academic and educational environment and stressors in the sociocultural and personal domains (Aubrey, 1991). Differences in the education system and issues affecting social relations on campus often contribute to educational challenges, and language and cultural barriers contribute to adjustment challenges for international students (Cena et al., 2021). Educational challenges include adaptation to the academic environment, the pressure of academics with an obligation to succeed, an adjustment to a foreign university system and the skills needed for success, and long hours of work and few hours of sleep (Akhtar & Kroener-Herwig, 2019; Allen et al., 2020). Scholars point to a high level of social alienation concerning personal and sociocultural challenges (Owie, 1982), as well as daily psychological changes in their acculturative experience (Akhtar & Kroener-Herwig, 2019). Most studies on international students are focused on reporting the context and possible causes and effects of stress. However, there are few studies on stress prevention, specifically quantitative focused on the design and evaluation of well-being interventions targeting international graduate students. There are also no interventions focused on stress that are founded on the premise of serious board games. Serious games are designed to educate and change behavior while entertaining in a way that produces high motivations, strong user involvement, and penetrating learning experiences that may lead to a more effective intervention (Westera, 2015) that may impact

therapeutic outcomes (Gauthier et al., 2019). Serious board games have a history of use in education, research, and mental health attendance and studies show that board games benefit specific psychological processes by enhancing brain activity (Vita-Barrul, 2022). Recent studies have shown that cognitive interventions based on modern board games are effective in maintaining cognitive health. Modern board games have shown decreased psychopathological symptoms and improved social functioning in psychiatric patients (Piñon-Blanco et al., 2020).

The literature on psychological stress and the literature on emotions have generally been treated as separate and distinct. Social and biological scientists interested in emotions are often unaware of relevant stress literature, and vice versa (Lazarus, 1993; King, 2021). A global survey study in 2020 reported that the propensity to experience negative emotions associated with stress and burnout in the workplace reached a world all time high (Gallup, 2021). Emotional regulation strategies like suppressing, faking, or hiding of true emotions led to greater overall burnout (Carson 2007; Chang 2009). Additionally, prior research has shown that the incidence and prevalence of unpleasant discrete emotions such as fear, anxiety, desperation, sorrow, frustration, anger, and their intensity may lead to emotional exhaustion, the antecedent of burnout (Chang 2009; Chang & Davis 2013). The seminal work of Lazarus on stress concluded that psychological stress should be considered part of emotions research, and that the role of positive emotions coping mechanisms should be evaluated (Lazarus, 2000). Grounded on emotional expression and positive emotions coping. Animalia is a pilot program designed to increase personal and social resources to cope with stress, prevent burnout, and increase well-being. Animalia is a self-liberating practice, presented as a serious and transformative game; it builds on an appreciative coping strategy to conserve and reconstitute well-being. The treatment has four components: (1) Emotional Expression; (2) Emotional Readiness, a protocol to transform

disruptive negative emotions into positive emotions; (3) Generative conversations; and (4) Metaphorical reasoning. The Animalia practice is focused on creating a safe space for appreciation, social awareness, reflexivity, and bottom-up emotional regulation. The intervention aims to facilitate the practice of emotional expression, vulnerability, and emotionally focused body work until it becomes a habit that builds bio-psychological resources. In the method section, we succinctly describe the game protocol—readers who would like a more in-depth introduction to the game are directed to Sanchez-King (2024). Given these gaps, the present study aims to find preliminary evidence of efficacy for this multicomponent emotional expression intervention and presented as a serious board game and a potential treatment for the prevention of stress and emotional exhaustion, the antecedent of burnout. Two questions (RQ) guide this study:

- a) RQ1: Does participation in the Animalia intervention relate to changes in the participants' self-assessed well-being? We hypothesize that the Animalia intervention increases overall levels of well-being.
- b) RQ2: What is the effect on work engagement, perceived stress, and emotional exhaustion before and after the intervention? We hypothesize that participation in the game will reduce perceived stress and emotional exhaustion and increase levels of work engagement.

The proposed research will provide insights into evaluating the components of the inversion. Such insights will allow researchers and practitioners to understand the potential benefits of emotional expression, metaphorical reasoning and mechanisms such as bottom-up emotional regulation and appreciative coping, which will contribute to the mental wellbeing of people in general and specifically international graduate students.

Methods

Characteristics of the participants

A total of 17 full time international graduate students from 8 countries and 5 Universities participated in the Animalia emotional expression game intervention. Inclusion criteria for participation in the study were: 1) Full-time international student status, 2) 21 years old and older, 3) Access to a computer or handheld device and internet, and 4) Fluent in English or Spanish. The sample had multicultural coverage from several countries of origin and ethnic backgrounds: North America (17.64%), South America (64.72%), Asia (5.88%), and Africa (11.76%). The majority of these participants identified as PhD students (64.71%), with the remainder identifying as Master students (35.29%). The mean age of participants was 33.17 years ($SD = 7.98$), and the sample had equal representation in terms of gender (47.06% female; 52.94% male). The majority of the participants identified themselves as being single (70.59%), with a minority reporting they were married (11.76%) or divorced/separated (17.64%). The vast majority reported being employed full-time as a graduate student (82.35%); others reported being a graduate student plus freelance work (11.76%) and graduate student plus other sources of employment (5.88%). Most of these students reported no economic dependents (82.35%). Table 1 displays all the characteristics of participants collected at baseline.

Table 1

International Students' Demographics and Professional Profiles

Demographic Information			Institutional and Cultural Background		
(n=17)	%	Cum	(n=17)	%	Cum

Gender				Country of Origin			
Female	8	47.06 %	47.06 %	Bangladesh	1	5.88 %	5.88 %
Male	9	52.94 %	100.00 %	Colombia	2	11.76 %	17.65 %
Age				Cuba	8	47.06 %	64.71 %
21-25	2	11.76 %	11.76 %	Ecuador	1	5.88 %	70.59 %
26-30	5	29.41 %	41.18 %	Ghana	1	5.88 %	76.47 %
31-35	5	29.41 %	70.59 %	Lesotho	1	5.88 %	82.35 %
36-40	2	11.76 %	82.35 %	México	2	11.76 %	94.12 %
41-45	1	5.88 %	88.24 %	United States	1	5.88 %	100.0 0%
46-50	2	11.76 %	100.00 %	Institutional Affiliation			
Marital Status				UMASS-Amherst	3	17.65 %	17.65 %
Single	12	70.59 %	70.59 %	MIT	1	5.88 %	23.53 %
Married	2	11.76 %	82.35 %	Universidad de Granada / UABCS	1	5.88 %	29.41 %
Separated / Divorced	3	17.65 %	100.00 %	Wageningen University	1	5.88 %	35.29 %
Ethnicity				IPN, Cicimar	11	64.71 %	100.0 0%
				Program			

Asian	1	5.88 %	5.88%	Doctorate	11	64.71 %	64.71 %
Black	2	11.76 %	17.65 %	Master	6	35.29 %	100%
Employment							
Latin	13	76.47 %	94.12 %	Full time Graduate Student	14	82.35 %	82.35 %
White not Latin	1	5.88 %	100.00 %	Graduate Student plus freelance work	2	11.76 %	94.12 %
				Graduate Student plus employment	1	5.88 %	100%

Note: UMASS = University of Massachusetts; UABCS = Universidad Autónoma de Baja California Sur; IPN=Instituto Politécnico Nacional; MIT= Massachusetts Institute of Technology

Measures

Key wellbeing instruments were used in this study including work engagement, perceived stress, and burnout. Each of these instruments is described in detail below.

Work Engagement

The most often used instrument to measure work engagement is the Utrecht Work Engagement Scale (Schaufeli et al., 2006), a self-report instrument that includes a sub-scale for the three engagement dimensions—vigor, dedication, and absorption. This instrument has been validated (Cronbach's alpha = .86) in several countries in Europe, and in North America (Bakker, 2009). The work engagement measure uses a Likert scale to quantify each item in an interval scale from 0 to 6 with answers being “Never,” “Almost never, a few times a year or less,” “Rarely, once a month or less,” “Sometimes, a few times a month,” “Very often, a few times a week,” and “Always, every day”. Participants' baseline questionnaires included the Utrecht Work

Engagement 3-item Scale. Questions included: When I am doing my work as a graduate student, I feel bursting with energy; I am enthusiastic about my studies; and I am immersed in my work as a graduate student. For the post-test assessment the researcher adapted some items and rating scales to suit the student's context to comply with a minimum difficulty threshold. Examples of these adapted items are: Right now, I am enthusiastic about my studies; Right now, I can be immersed in my work; and Right now, I feel bursting with energy.

Perceived Stress Measures

The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress (Cohen et al., 1988) with evidence of reliability and validity (Cronbach's $\alpha = .78$). It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap into how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed for community samples with at least a junior high school education. The items are designed to be easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are general and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way. For example: a) In the last month, how often have you felt that you were unable to control important things in your life? b) In the last month, how often have you felt nervous and stressed?. For the posttest assessment some items and rating scales were adapted by the researcher to suit the student's context to comply with a minimum difficulty threshold. Examples of these adapted items are: Right now, do you feel confident about your ability to handle your personal problems?; Right now, do you think you have control of important things in your life?.

Burnout Measures

Maslach's (1997) seminal work on burnout was used as a measure. The Maslach Burnout Inventory is a 22-item instrument with evidence of acceptable psychometric properties (Cronbach's $\alpha = .90$). This measure is widely used and validated in samples of health care services, students and teachers. The measurement uses a 7-level Likert scale with anchors including "never," "a few times a year," "once a month," "a few times a month," "once a week," "a few times a week," to "every day." There are three subscales: the Emotional Exhaustion (EE) subscale has 9 items (range, 0-54), the Depersonalization (DP) (treating people as objects) sub-scale has 5 items (range 0 – 30), and the sense of Personal Accomplishment (PA) subscale has 8 items (range 0 – 48). There is no total burnout score calculated; instead, the scale's authors define any score more than 26 on the Emotional Exhaustion subscale, more than nine on the Depersonalization sub-scale, or less than 34 on the Personal Accomplishment subscale as representing burnout. For example: a) I feel very energetic at work b) I am frustrated at my job. For the posttest assessment, the items and rating scales were also adapted.

Research Design

The study design consists of a pretest-posttest single group pre-experimental design with two observations: one at the baseline and a second right at the end of the intervention. Pre-experimental designs have been useful to find preliminary evidence of change and are a critical step in the process of intervention development [National Center for Complementary and Integrative Health (NIH), 2024]. To analyze the data and assess whether the Animalia game treatment has had a significant effect, paired samples t-tests were used. In statistical analysis, the t-test is a hypothesis-testing technique used to test the hypothesis related to linearity and the relationship between the response variable and different predictor variables (Kumar, 2019).

Recruitment and Data Collection

During January and February 2024, before the beginning of the Spring 2024 semester, international graduate students from major Universities on the United States West Coast and Baja California Sur, México, Universidad de Granada, Spain; and Wageningen University, of Netherlands were contacted and invited to participate in the study. Participants were recruited via an email sent by the University Office for International Student's Services with information on participating and accessing the study website (www.playanimalia.com). Interested students could register to participate through the website and a direct email or text message to the researcher. An initial screening was conducted to ensure each participant met all inclusion criteria. Qualifying participants received a confirmation email and a consent form. The researcher scheduled five intervention game sessions: (1) January 22nd at the University of Massachusetts Campus Amherst; (2) January 26th at Boston College; (3) February 23rd and (4) March 4th at Instituto Politécnico Nacional, Centro de Investigaciones Científicas y Marinas (CICIMAR); and (5) a final fifth session on February 27th held at the home of the researcher with international students from Wageningen University, Netherlands and Universidad de Granada, Spain. In a private setting, and in the presence of all the participants scheduled for each session, the researcher informed the participants before the baseline assessment about the study and the protocols to secure confidentiality and the consent form procedure. Then, the researcher provided a link to the survey to all participants who answered the survey using their handheld devices. A pre-intervention questionnaire covering demographics and a pretest survey were completed by accessing the online survey administered by the Qualtrics survey data platform (Qualtrics, 2017). Members of the research team were available to assist with technical difficulties and address data collection issues. Baseline data was collected prior to the initiation of each intervention game session. Immediately after all students finished the pretest survey, the game intervention began;

promptly after the game ended, students used their handheld devices to answer the post-test survey. No financial compensation was provided for participating in the study; however, all participants were compensated with food and the therapeutic game session subject of the study. The Boston College Institutional Review Board approved the study procedures which included the presence of persons with clinical training during the interventions.

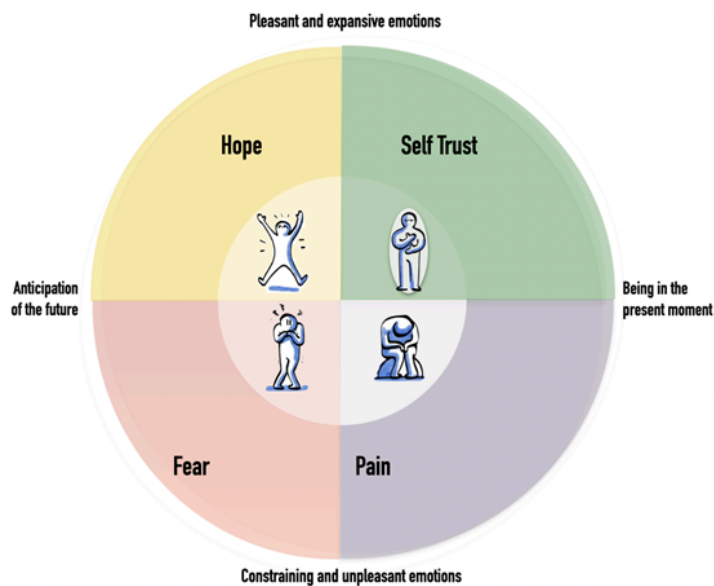
Procedures and Materials: Animalia's board game protocol

In preparation for the game, participants are led by the facilitator to be mindful of their bodies through a grounding exercise. When participants are settled and feel relaxed, they are guided to visualize and embody their current life challenges. After this body-mind somatization, the game begins. Players then are invited to scan their bodies and reflect on their intimate feelings, described in terms of emergent discrete emotions. Players are prompted to intuitively discover an animal that might represent their experience. Right after this experience, players approach the table with the board game to search for a token in the shape of their visualized animals. If the animals are not available, they are invited to draw theirs on a small piece of paper. Then, the facilitator explains how to position the game figures on the board. To position their animals, players describe their emotions in terms of pleasant and expanding, or unpleasant and constraining, then they report their intensity from 1 to 10, and finally the orientation that they choose to direct their animal (inward or outward). After players get familiar with these criteria, they can position their animals on the emotional map located at the center of board game as follows: 1) The enthusiasm quadrant, mapping confidence for the future and foreseeing possibilities, characterized by hope / motivation / excitement / determination / resolution; 2) The joy, peace and love quadrant, mapping self-trust, acceptance and confidence in the present, characterized by joy / peace / content / interest / curiosity / love; 3) The fear quadrant mapping negative anticipations and lack of confidence in the future; characterized by worries / timidity /

fear / stress / anguish / anxiety; Finally 4) The pain quadrant, mapping any physical pain, and/or emotional suffering, characterized by frustration / sadness / anger / resentment / resignation and resentment from the past. Figure 1 presents the emotional map used in the game.

Figure 1

Emotional Model, Inspired by The Ancient Greek Stoic School of Thought.



After players position themselves on the board, they are invited to either draw, perform or create a story that shares the experiences of their animals. Each player can express as much as desired and is free to share or disclose any aspects of their experience. In a second moment, participants choose what the game will be about. They get to decide by consensus domains or themes worthy of exploration during the game in accordance with their current life challenge. Examples of themes can be and are not limited to work, money, family, health, environment, parenting, relationships, and vocation. After consensus is met on at least three themes by minimum, each theme gets assigned numbers from the game die. The first player who shared in the previous round gets to throw the die, randomly each theme is chosen to be played by

repeating the initial procedure: visualization, embodiment, and reflection on bodily sensations, feelings and emotions to discover a new animal to be positioned on the board. After several rounds or when participants choose to end, players draw a card. The cards provide a final insight that informs the player's challenge. Players are encouraged to share the content and learnings from their cards. To close the Animalia game session a final visualization takes place. The challenge is revisited by all participants acknowledging the experience of the game, the animals, conversations, cards, etc. To finalize the facilitator, ask participants to report their feelings, bodily sensations and the emotions promptly after the mindful visualization.

Data Analysis

This experimental study examined the difference between pretest and posttest responses in two moments, before the game intervention and immediately after the game intervention. To determine whether participation in the program correlated with changes in the participants, a dependent t-test was employed to examine if there existed a notable disparity between the means of pre-test and post-test measurements. Consistent with guidelines for sample size determination in pilot studies in which no hypotheses are being formally tested (Leon et al., 2011), the sample size (17 international graduate students) was based in part on resources and recruitment feasibility. Sample size guidelines recommend at least 15-25 participants for pilot studies (Whitehead et al., 2016). This sample size should provide data with a reasonable standardized difference as a parameter that may be used to inform the sample size determination for a subsequent efficacy trial (Whitehead et al., 2016). Analyses will focus on effect sizes rather than statistical significance and will be considered preliminary. To explain the magnitude of the difference between the mean values for the baseline and post-Animalia, Cohen's d was used as a measure of effect size considering responses ($d = 0.2$ [small], $d = 0.5$ [medium], $d = 0.8$ [large]). All statistical analyses were conducted using Stata 17. There was not missing data for any of the

measures and three items from the Burnout inventory were identified as failing to capture the psychometric intention for the posttest assessment. Specifically, items (EE6, EE8, DP5) from the Emotional Exhaustion and Depersonalization subscales were discarded.

Results

We observed several significant pre-to-post differences among participants. The Animalia intervention shows a statistical significance on a change effect that increases work engagement ($p < .001$) with a large magnitude of the difference (Cohen's $d = -1.27$); reduces perceived stress ($p = .001$) with a large magnitude of difference (Cohen's $d = .87$) and increases of personal accomplishment ($p = .003$) with a large magnitude of difference (Cohen's $d = -.74$). Table 2 shows results of baseline and post-Animalia assessments on students' wellbeing.

Table 2

International Students' Wellbeing baseline and post Animalia Intervention

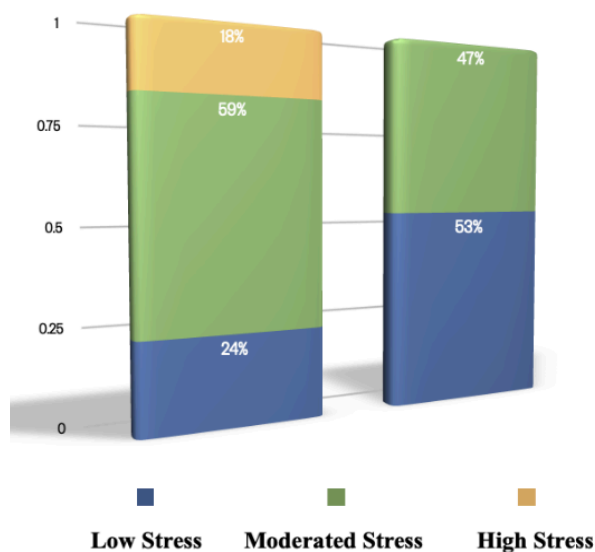
	<i>Baseline</i>		<i>Post Animalia</i>							
	<i>(n=17)</i>		<i>(n=17)</i>							
	M	SD	M	SD	<i>Dif</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>Cohen's d</i>	
Work Engagement (WE 3 items)	3.72	0.98	4.72	0.93	-1.0	0.799	-5.15	< .001	-1.25	
Perceived Stress (PS 10 items)	1.8	0.63	1.26	0.56	0.53	0.61	3.56	> .001	0.87	
Emotional Exhaustion (EE 10 items)	2.51	0.50	2.51	0.50	0.00	0.51	-0.02	.489	NA	
Depersonalization (DP 5 items)	2.24	0.66	1.94	0.50	0.30	0.74	1.65	.0585	0.41	
Personal Accomplishment (PA 6 items)	2.75	0.37	3.11	0.55	-0.35 7	0.477	-3.09	< 0.003	-0.75	

Note: EE, DP and PA are subscales of the Burnout inventory. The original scale was adapted for this study and items EE6, EE8 and DP5 were discarded. Cohen's d is a measure of effect size or the magnitude of the difference between the mean values for the baseline and post-Animalia responses ($d = 0.2$ [small], $d = 0.5$ [medium], $d = 0.8$ [large]).

At baseline, 24% of participants reported low stress, 59% moderate stress, and 18% high stress. After the intervention, 53% of participants reported low stress, 47% reported moderated stress, and 0% reported high stress levels. Figure 2 shows percentages of reported stress levels at baseline and post-game.

Figure 2

Percentages of reported stress levels at baseline and post-game.

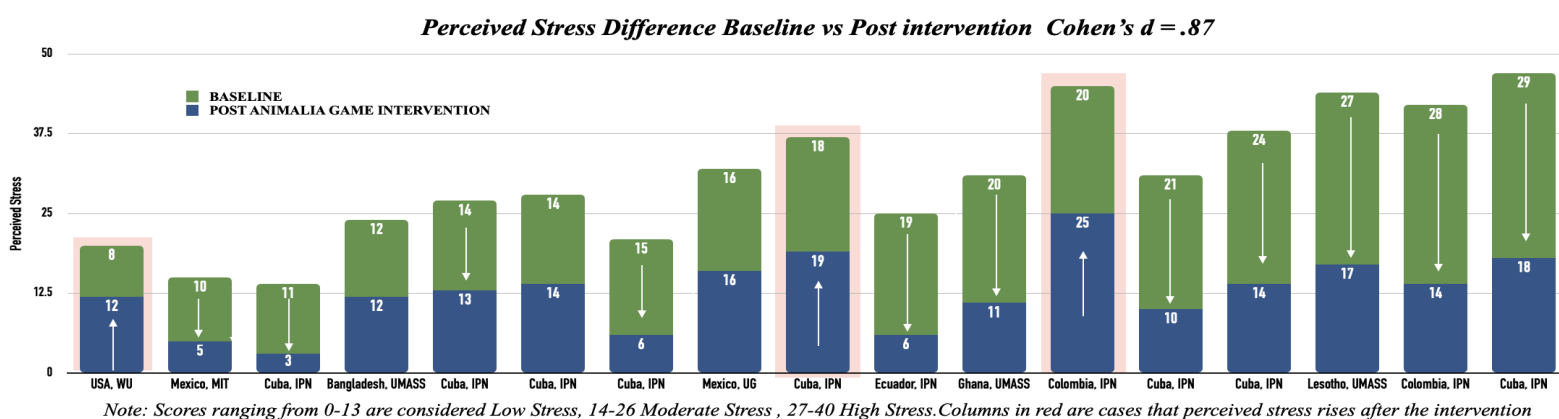


Differences on Perceived Stress (PS) show that roughly 65% of the sample reduced their levels of stress perception after participating in the intervention; 23% maintained the same levels of

(PS); and 12% increased their stress perception with a small magnitude of change. Figure 3 shows case by case the Perceived Stress variations among participants (n=17).

Figure 3

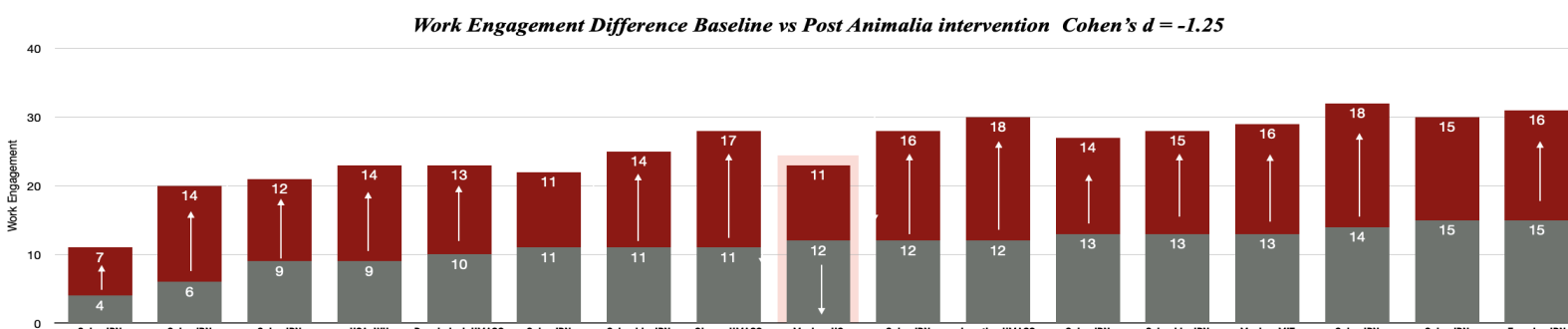
Perceived Stress Difference (n=17) among participants baseline vs. post Animalia intervention



Differences on Work Engagement (WE) show that roughly 82% of the participants reported increased levels of WE after participating in the game intervention; 12% maintained the same WE levels; and 6% decreased their WE with a minimal difference. Figure 4 shows case by case the WE variations among participants (n=17).

Figure 4

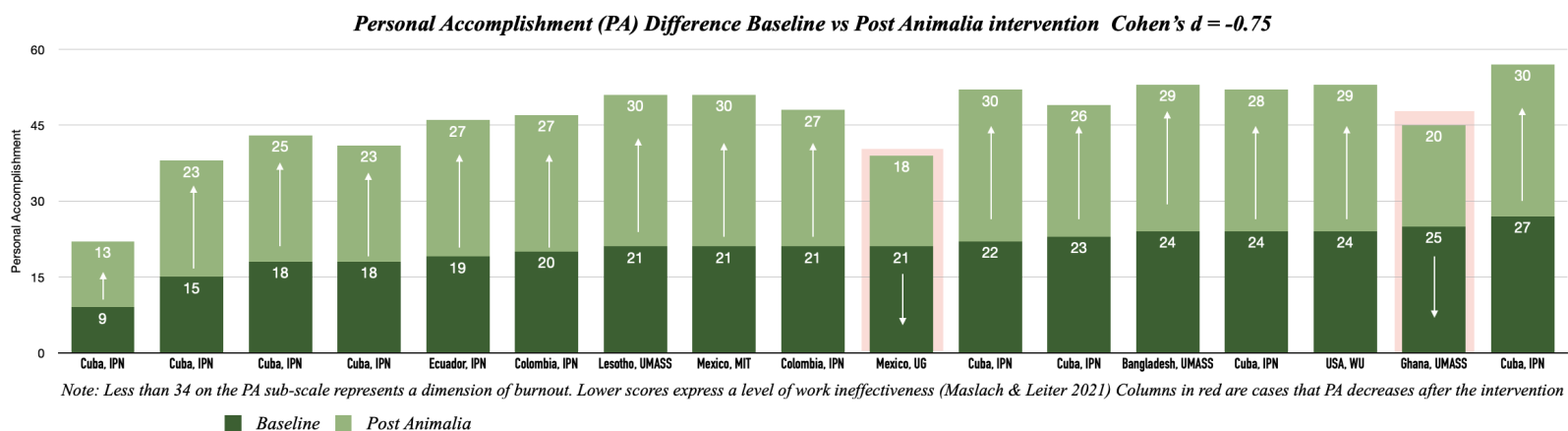
Work Engagement Difference (n=17) among participants baseline vs. post Animalia intervention



After participating in the Animalia game intervention, differences in Personal Accomplishment (PA) were reported by the participants; roughly 88% increased their PA levels, and 12% decreased the levels of (PA) with a slight difference between the pre- and post-assessment. Figure 5 shows case by case the differences in PA among participants ($n=17$). Depersonalization — a dimension of burnout — ($n=17$) did not reach significance ($p = .0585$) to support the claims of change in this dimension. Figure 5 shows the PA variations among participants ($n=17$).

Figure 5

Personal Accomplishment difference ($n=17$) among participants baseline vs. post Animalia intervention



Discussion

Below we examine key study findings and situate these findings within the broader literature on international student wellbeing. Importantly, we observed several significant pre-to-post differences among participants. The first key finding is that we observed significant decreases—with large magnitudes of change—in perceived stress after participation in Animalia.

Consistent with emotional theories such as appraisal and social appraisal theories, this change suggests that players of *Animalia* were able to change their perspective, cope and reappraise a troubled relationship with the environment. More precisely, this finding suggests that corresponding appraisal patterns of stressful situations (Lazarus, 2001) were transformed into possibilities such as the appreciative coping strategy (Sanchez King et al. 2021). Evidence found in this study showed the shift in relational meaning (Lazarus, 2001) that led international students to experience pleasant and expanding emotions (Fredrickson, 2004). Apart from the components of the intervention, the drop in stress perception could also be explained by the social awareness aspect of the game. Social support operates in opposition to the social alienation concerning the personal level and sociocultural challenges that international students face (Owie, 1982); International graduate students' work can be socially isolating and lonely during research or a dissertation project (Aubrey 1991). The game may operate as a socialization mechanism that provides an atmosphere for sharing common problems and concerns. It is likely that the social aspect of the game facilitated participant's discovery of social resources useful to cope with stress.

The second key finding is that complementary of these changes in perceived stress, Work Engagement (WE) levels and Personal Accomplishment (PA) levels were increased. According to Utrecht & Valencia (2003) WE is considered to be the antipode of burnout. It is important to point out that most of the international students showed low levels of PA before the intervention. Maslach and Leiter (2016) argue that low levels of PA represent a dimension of burnout. Therefore, the increased levels of PA from the international students that participated in the study represent a sign of professional efficacy and wellbeing (Maslach & Leiter, 2021). It is important to note that international graduate students' work can be engaging, pursuing a Masters or a PhD

can be exciting and rewarding in this regard. We should note that increasing work engagement levels does not mean that students' burnout dimensions might not be present since both constructs capture different psychometrics.

The third key finding is that the reflective, appreciative and mindful process of the game intervention produced a sense of energetic and effective connection of participants with their studies activities; they were able to see themselves as capable to deal well with the demands of their student workload. As a facilitator I had observed that through the game mechanisms, international graduate students were able to spontaneously implement the appreciative coping strategy (Sanchez King et al., 2021). We also found that three participants increased their levels of perceived stress after the Animalia intervention. This can be explained due the nature of the intervention that invites participants into a deep reflection of the current challenges. PS could rise because of the realization of a student's bigger reality. Finally, there were null findings for Emotional Exhaustion and Depersonalization subscales. The findings suggest that the intervention might be effective. However, given the limitations of the sample size and the data points collection. These results should be interpreted carefully and confirmed in a fully powered Randomized Control Trial (RCT) longitudinal study.

Implications

Theoretical implications. I believe that stress should be studied from a transformational perspective. Not exclusively as a troubled relationship with the environment (Lazarus, 2001) where threats, loss and harm persist. But from a self-liberating view on how life's circumstances and changes can be transformed into opportunities, gains and relief. The development of an Appreciative Coping model could be used to guide further studies toward self-care and assess how emotional transformation and emotional readiness may be possible. Positive coping can be

the ultimate individual source for life satisfaction and overcoming hardship. This and further studies could be the foundation for the development of a Transformational Stress Theory.

Methodological implications. This pilot test for the Animalia game intervention showed promising outcomes. The intervention should continue to be refined. To evaluate the intervention a full powered study with a larger sample, and a comparison group should be included. This study should focus on the long-term effect of the intervention considering more data collection points. We also have observed that it is possible to study participant's somatization effect to bring light to specific organizational structural causes of stress. The intervention should also be tested with other populations. I believe that social services professionals such as caregivers, nurses, teachers and young activists that face emotional demands are suitable populations for a comparison analysis of the effects of the intervention.

Practical implications. Psychologists, social workers, teachers and coaches could be trained and certified as Animalia facilitators so that they can extend the practice and research of self-liberating stress toward well-being. The intervention could also be adapted for retail with the proper self-guiding instructions in a game board fashion, so that it can be used in homes and professional settings independent from a facilitator.

Limitations

This study has several limitations. First, it is important to consider that the sample size was small, which could have implications on the statistical power of the study. Second, our approach was a single group, pretest posttest design. The lack of a control group prevents a causal relationship between changes in outcomes and the intervention. The study design also precluded examination of longer-term changes. Additional data points collection are needed to evaluate if the proximal changes can be sustained overtime. Third, we adapted the measures for

the post-test assessment; some measures were designed to capture incidence traits for the previous month and were not designed originally to immediately capture post-test assessments. Fourth, we did not measure or inquire in advance about participants' potential meditation or mindfulness habits that may influence positive outcomes. Fifth, since the intervention uses an atheoretical and onto-epistemology approach, and the events depend on the number of players and their specific conversations and perspectives, each game session was unique, presumably producing different outcomes. Sixth, several biases could happen during the study. Since the students knew the purpose of the study, they could behave in accordance with the pre-set expectations. Participants could also be motivated to answer the survey questions to reinforce characteristics and behaviors that are generally socially desirable and deny those that are not. The intervention was designed, facilitated and evaluated by the same researcher which can lead to experimenter bias. Lastly, since this is a limited pilot study, it is essential to interpret the results cautiously.

Conclusions

Preliminary signals of efficacy associated with the implementation of the Animalia's game intervention showed significantly increased levels of Work Engagement, reduced levels of Perceived Stress and increased levels of Personal Accomplishment with large magnitudes of difference. Pilot data demonstrates that the effects of the intervention look promising enough to begin examining the design of future analytic plans. This pilot study data and its parameters may inform the necessary sample size for a subsequent Randomized Control Trial (RCT). Further powered studies like RCT with a larger sample should be developed. Since the intervention showed multiple effects of change, new variables such as social awareness, empathy and other set of scales designed specifically for experimental research practices should be tested. Larger

studies addressing the limitations that could include physiological measures are needed to confirm the efficacy of the treatment.

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CHAPTER V: CONCLUSIONS AND IMPLICATIONS

Abstract

The World Health Organization (2020) states chronic work stress and burnout are two silent epidemics. And yet, little attention has been paid to understanding the systemic causes of chronic stress and helping individuals to recover from and prevent stress. The core objective of this three-paper dissertation was to address these important gaps by building on exploratory research and evidence-based research to evaluate a pilot intervention designed to build psychological resources to cope with stress and promote work engagement. Paper 1 explores resources and strategies used during the pandemic to cope with stress. Here, we found that recursive reflection and appreciation lead to better ways to cope with stress, including a variety of positive and future coping strategies. In Paper 2, we provide an in-depth description of a therapeutic board game, Animalia, designed to offer mental health benefits and present the Self-Liberation Theory of Change that supports its claims. This paper argued that recursive emotional expression, body awareness, and reflection regulate the human emotional system, opening space for clarity, creativity, and spontaneous well-being. Finally, in Paper 3, we conducted a pilot study focused on preliminary evidence of change in mediators and proximal outcomes due to playing the Animalia game. In this final paper, we saw preliminary evidence that playing Animalia seemed to have helped students transform habitual appraisal patterns commonly founded on self-demands and reduce their stress perception. In accordance with the serious game's literature, we also saw preliminary evidence that participants viewed the Animalia intervention as engaging as a game (Eichenberg et al., 2017) and related to international students' work engagement. All these preliminary findings should be evaluated in further studies, but—critically—this dissertation sets the foundations for the refinement and development of Animalia's transformational game intervention.

Keywords: Burnout; Coping Strategies; Intervention research; Serious games; Social Work.

Introduction

The present Chapter (5) is an overall discussion and conclusions about the contributions of this dissertation to the stress and burnout intervention literature and overall implications for practice, research, and policy.

I entered the PhD program aiming to contribute to the social welfare of vulnerable populations. I sought to do research that could be beneficial, impactful, professionally meaningful, and fulfilling. Being an international doctoral student has been a long and challenging process. During the last years, I had experienced a series of challenging events — living abroad, financial hardship, a disruptive pandemic and divorce— that affected my life in such a way that I realized with surprise that I was experiencing chronic stress and, as an international doctoral student, I was part of an unattended population. As read in paper 1, Chapter (2), my inquiry quest began during the Covid-19 pandemic when I decided to explore and document international graduate students' experiences of stress. During this exploratory study, I observed a pattern among the sample of international social work doctoral students. How they coped with stress and challenges differed from what I had read in the stress-coping literature. I noticed that the mentality embedded in social workers' vocation was key to shifting negative perspectives into positive ones. Being appreciative during disruptive and stressful moments has shown to be a potential trait of all human beings, as expressed by the social workers in my study. What I observed inspired me to understand stress not from the perspective of negative emotions, but rather a way to transform stressful experiences into positive experiences. My observations led me to describe a particular positive coping strategy that I entitled “appreciative coping” (Sanchez King et al., 2021). This insight opened the possibility for

me to study and understand the etiology of stress from a personal or onto-epistemological approach. I strongly believe that understanding an appreciative coping strategy opens the possibility of designing effective human-centered interventions to prevent stress and burnout and that an ontological design founded on human biology can go beyond the scope of exclusively international graduate students. In paper 2, Chapter (3), I describe such a design presented as a transformational game entitled Animalia, an intervention designed to prevent stress and burnout. In this article, I describe a novel framework to understand emotions from a systemic approach, integrating different emotional theories to understand the complexity of emotional stress. The Animalia practice operates, and flows based on this systemic understanding of emotions. Founded on this practice and hundreds of Animalia game sessions, I was able to propose what I believe is the greatest contribution presented in this dissertation: A Self-Liberation Theory of Change. Due to its ontological nature in the implementation, I strongly believe that this theory can be useful in designing a variety of logic models to address specific stress prevention and work-engaging programs targeting different populations. Finally, in paper 3, Chapter (4), I present a pilot study that uses a pre-experimental design that provides evidence of change for Animalia's game intervention on stress perception, work engagement, and personal accomplishment. Preliminary findings of this study suggest that the Animalia intervention might be an effective treatment to reduce stress perception and increase levels of work engagement and personal accomplishment with null findings on emotional exhaustion and depersonalization. The initial findings from this study indicate that I should continue the refinement and development of the Animalia intervention, addressing the limitations of this study with a full powered randomized control trial.

This chapter is structured into three main sections. In section one, I discuss how the contributions of this dissertation address some of the knowledge gaps in the current literature on stress and burnout of international graduate students. In section two, I present the conclusions and propose a social perspective on social stress, arguing how stress originated in the workplace perpetuated by individuals who do not consider the importance of emotions as a constitutive feature of human biology. Finally, in section three, I present the limitations and the implications for clinical practice, policy, and directions for future research.

Discussion

Contributions to the Stress and Burnout Literature

Paper 1

This study is a qualitative assessment of international doctoral students' resources and coping strategies during stressful experiences of the first wave of the COVID-19 pandemic.

Despite the scientific advancements over the last 30 years in documenting stress and burnout, little attention has been paid to understanding how interpersonal relationships and appraisal processes in the social and cultural environment might explain the propensity to experience unpleasant discrete emotions that may cause emotional exhaustion (Chang, 2009) and how positive emotions may enhance protective effects on stress (Folkman et al., 2009). The study of stress and health requires attention to the central context of interpersonal relationships and emotional processes (Smith & Weihs, 2019). The personal experiences of students have largely remained under-explored, and most stress and coping studies have ignored the situational and life context of students and their appraisals of how they could realistically cope (Amran & Ibrahim, 2012; Lazarus, 2000; Pappa et al., 2020).

Finding 1, Recursive reflection and appreciation leads to better ways to cope with stress.

Through this first empirical study, I learned from a cohort of international doctoral social work students how personal and interpersonal appraisals are related to particular resources and strategies and observed how being appreciative of the circumstances may lead to experiencing positive emotions (Sanchez King et al., 2021) to reappraise and overcome hardship. For this sample of social work students, optimism, anticipation, and creativity toward social reach were fundamental in their reappraisal processes. According to Schwarzer (2000), depending on the temporal location of the (potential) stressor and the degree of certainty with which it would occur, four categories of coping can be observed: reactive, anticipatory, preventive, and proactive coping. The mediating impacts of both preventive and proactive coping were demonstrated between stressors and student engagement, supporting the beneficial effects of these types of coping on individual well-being outcomes (Brigs et al., 2017). In my study, I noticed how being appreciative and reflective of the circumstances and purposely making plans was an effective strategy that allowed international social work PhD students to reappraise their circumstances, leading them to discover new resources to cope. Being appreciative during disruptive and stressful moments has shown to be a potential trait of all human beings, as expressed by the social workers in my study.

Paper 2

This paper is a conceptual article that describes the origins and inspirations of the Animalia intervention and presents the Self-Liberation Theory of Change.

Emotions are a very important aspect of human development and health (Sen & Nussbaum, 2001); on the contrary, the systematic neglect of human emotions in organizations may greatly impact people's quality of life, well-being, and health. Interventions that address stress and burnout have not paid enough attention to the relationship between emotions and health. A

growing number of studies suggest that developing the various facets of emotional literacy is beneficial for human relationships, societies, and health (Goleman, 1996; Ornish, 1998; Stewart-Brown, 2000). The Animalia game intervention focused on stress and burnout addresses these gaps by understanding the preventive role of positive emotions to avoid overextended negative emotions associated with stress and burnout. Animalia incorporates multicomponent therapeutic approaches founded on emotional expression and emotional readiness, such as the active and spontaneous regulation of negative emotions, the practice of positive coping strategies, the practice of interpersonal skills to increase social support, and generative conversations focused on specific professional high-stress situations, and the use of relaxation and visualization techniques (Wiederhold et al., 2018). Furthermore, Animalia's ontological design considers participants' life contexts and interpersonal relationships using a modern board game to engage and facilitate reflection and bottom-up emotional regulation and foster appreciative and generative conversations. My personal practice of Animalia started in 2015, and since then, I have gained experience and understanding of body-language interactions. This practice has led me to the development of a Self-Liberation Theory of Change presented in this conceptual article. *A key finding from this study is that* recursive emotional expression, body awareness, and reflection regulate the human emotional system, opening space for clarity, creativity, and spontaneous well-being. Due to its ontological nature founded on cultural biology, I strongly believe that this theory can be useful in designing a variety of logic models to address specific stress prevention and work-engaging programs targeting different populations beyond the scope exclusively of international graduate students.

Paper 3

This paper is the second empirical study of this dissertation—the Animalia pilot study—this study is the first step to evaluate the Self-Liberation Theory of Change. Stress and burnout affect millions of people worldwide (WHO, 2020). The structure and functioning of Universities and all educational settings shape how people interact with one another and how international graduate students carry out their duties. From this perspective it can be argued—as is the case in this dissertation—that stress and burnout are largely a cultural and organizational environmental problem. *A key finding is that playing Animalia helped graduate students transform habitual appraisal patterns founded on self-demands and reduce their stress perception.* I have witnessed how students create awareness of such internalized demands and bring sufficient reflection to identify available personal and social resources and, by being appreciative, reduce their stress perception. The emotional literacy and bodywork implied in Animalia practice may bring forward spontaneous emotional regulation. Throughout the components of the Animalia treatment, students explored their current situations to unveil their emotions and vice versa. By playing, all international students who participated in the pilot study could express feelings, describe circumstances, and relieve emotions. According to Chang (2009), to ease stress, students need a better understanding of how their emotions are triggered and practicing how to regulate those emotions. This is exactly what Animalia practice brings. Furthermore, by reflecting on their emotions and expressing them through play and the Animalia protocol, international students could transform states of emotional pain and anxiety, reconnect with their purpose, and gain insights and self-awareness to prioritize and align self-expectations. As seen in the study results, the mediating impacts of Animalia were also demonstrated between stressors and student engagement (Gan et al., 2007). *In finding 4*, in accordance with the serious

game's literature, we also saw preliminary evidence that participants viewed the Animalia intervention as engaging as a game (Eichenberg et al., 2017) and related to international students' work engagement. Presumably through positive and future coping mediating work engagement (Gan et al., 2007). Furthermore, we argue that being appreciative is a human quality that allows acceptance, gratitude, and recognition of the circumstances, therefore operating as a past and future coping mechanism that leads toward accountability. These human qualities and practices might be wellbeing's operational and biological foundations.

The preliminary results of this research revealed that appreciative coping might demonstrate significant relationships with cognitive appraisal, work-related support, personality, and psychological strain, in accordance with the propositions of the transactional theory stress (Lazarus & Folkman, 1984; Folkman & Creed, 2000), Fredrickson Broaden Theory of Positive Emotions and Maturana's Biology of Love. We argue that appreciation is the generative mechanism for positive emotions. Furthermore, I observed that emotional expression, specifically the metaphorical reasoning practice that operates in the heart of Animalia, might have the potential to be extended outside the game realm, such as transformational games that aim for the player to demonstrate behavioral changes outside the game context (Culyba, 2018). Research by Vita-Barrull et al. (2020) found that it is possible to transfer the effects of cognitive training to how executive functions are applied to the real world, decreasing executive dysfunctions and increasing the cognitive health of children.

Conclusions

This dissertation is a first step for the development and testing of an emotional expression intervention for the treatment and prevention of stress while concurrently observing appraisal patterns associated with the propensity to experience overextended disruptive emotions

(associated with burnout and stress) and pleasant and expanding emotions associated with positive coping strategies. The main findings of this dissertation contribute to the literature on positive emotion coping, stress and burnout prevention, intervention research, and serious games. Recursive reflection and appreciation foster improved stress management, encompassing a range of positive and future-oriented coping strategies such as appreciative, anticipatory, proactive, and preventive coping (Schwarzer, 2000). Recursive emotional expression, body awareness, and reflection also help regulate the human emotional system, creating opportunities for clarity, creativity, and spontaneous well-being. Engaging with Animalia enabled students to transform their habitual appraisal patterns commonly based on self-demands, reducing their perceived stress. Moreover, aligning with the serious game's literature, the Animalia intervention demonstrated engaging gameplay (Eichenberg et al., 2017) and enhanced work engagement among international students. These preliminary findings warrant further evaluation in subsequent studies. This dissertation lays the groundwork for refining and developing Animalia's transformational game intervention.

As a conclusion for this thesis, papers 1, 2, and 3 showed us that emotions matter and that they can be expressed, shared, and appreciated. Emotions should be considered a valuable personal and social resource to cope with stress toward living a more meaningful and engaging life. Play, emotions, and the desire for well-being are constitutive of all human beings and should be addressed seriously and playfully. I learned from this dissertation and can hypothesize that stress may originate when emotions are not regulated properly, setting the foundations for emotional contradictions or conflicts that continuously perpetuate fear, anxiety, frustration, and other intense, disruptive emotions. The etiology of burnout and stress points to emotions (Lazarus, 2000; Maslach, 2001). Emotions, such as needs and desires, can only be

operationalized by individuals. I see stress from this perspective, not as an external stimulus. People should be accountable moment by moment for their particular discrete emotions and the individual/environmental transformation they intend to produce consciously or unconsciously.

As a final comment, one that emerges from the particular observer I am—an individual trained and experienced in the fields of production, industrial engineering, marketing, technology, cultural biology, psychology, and social work. I can say that my experience of chronic stress is the consequence of a troubled relationship with Self. Stress is a relational problem with myself and my working environment. My personal stress originated in an inner intimate and personal conversation, in such a way that I value more — in detrimental to my physical and mental health — the demands, expectations, assumptions, and judgments (Maturana et al., 2008) of a social system that may be demanding, competing or antisocial, and nevertheless, one in which I choose to participate in since I want to belong and comply with such demands and consensual behavior to achieve or gain something. I can see that personal stress may continue until an observer decides to set boundaries by realizing through pain that such behavior is unsustainable or continue with the consequences since he or she may operate blind or alienated from his or her bodily sensations and emotions in such a way that does not feel the burden until it is too late. I observe that stress and burnout are an organizational health problem when the demands and expectations of the productive system are perpetuated in conversations by the participants of the system that set consensual coordinations that neglect, discard or manipulate fellow human emotions. Stress is a cultural, organizational, and, ultimately, a structural problem. One of the main challenges of this dissertation was the resistance from Universities and Graduate Students to implement the Animalia pilot program (Awa et al., 2009). I think this challenge comes from valuing a way of life when we are focused — and sometimes

obsessed — on outcomes and being productive (Marcuse Group, 2009). The anglicism busy/ness explains it very well. “Business” implies the frenzy of being busy producing/selling. Being busy is often how we justify our existence. One in which we may think we are valuable to the extent that we are efficient in productive spaces. Business, work, and studies are necessary but not always desirable. Taking care of what is necessary without considering what is desired is productive alienation and delusion. Attending exclusively to what is desired without seeing what is necessary is a hedonistic delirium. We live immersed in this dilemma framed as the notion of “life-work balance”; in one extreme, our reason justifies the denial of emotions and desires, and vice versa. Accountability for personal stress may dissolve this illusion, and in return, persons may become accountable toward self-care and the care of their social and natural environments.

Implications

The findings from this dissertation have several theoretical, methodological, and clinical implications. Regarding theoretical implications, based on the findings presented here, I argue—that stress should be studied from a transformational perspective—not exclusively as a troubled relationship with the environment (Lazarus, 2001; Folkman, 2000) where threats, loss, and harm persist, but from a self-liberating view on how life’s circumstances and changes can be transformed into opportunities, gains, and relief. The development of an Appreciative Coping model could guide further studies toward self-care and assess how emotional transformation and readiness may be possible. Positive coping can be the ultimate individual source of life satisfaction and overcoming hardship. This and further studies could be the foundation for developing a Transformational Stress Theory.

With respect to methodological implications, it should be noted that this pilot test—although preliminary—for the Animalia game intervention showed promising outcomes.

The intervention should continue to be refined, with particular attention paid to mechanisms that bring reflection to acceptance, forgiveness, recognition, and gratitude. Moreover, a randomized controlled study should be conducted with full statistical power to evaluate the intervention. Additionally, future research studies should focus on the long-term effect of the intervention by considering more data collection points and physiological measures. We also have observed that it is possible to study participants' somatization effect to highlight specific organizational structural stress causes. The intervention should also be tested with other populations and institutions, addressing more detailed cultural and organizational differences. I believe that a dyad of social services professionals and their institutions, such as caregivers, nurses, teachers, and young activists who face emotional demands, are suitable populations for a comparison analysis of the effects of the intervention.

Clinical implications. I have learned through this dissertation that emotional expression is very important and can be effective. Psychologists, social workers, teachers, and coaches should contemplate integrating this practice personally so that they can extend their experiences to their clinical practice. Furthermore, special attention should be paid to emotional states of being, particularly peace and those that get people stuck in the past, such as resignation and resentment. Overcoming these emotional states and being in peace sets the ground for positive emotions. A personal practice of reflection with appreciation, acceptance, gratitude, and recognition can be extended to an appreciative inquiry into patients' circumstances. Due to the atheoretical and onto-epistemology approach used in *Animalia*, a minimal baseline of emotional literacy is needed to facilitate the game intervention; any self-lead group of students or teachers, mentors, coaches, and university advisors that are willing to help unveil and vent a stressful environment may play and self-learn the *Animalia* practice. To scale the intervention research

and clinical practices, social service professionals with training in clinical social work, psychology, family systems, conductive behavioral therapy, and gestalt psychology can easily learn Animalia and extend the self-liberating stress practice toward well-being. The intervention could also be scaled using software technology, specifically integrating ecological momentary assessments, a research method that assesses behavioral and cognitive processes within their natural environments. A smartphone application may allow repeated measures to assess respondents' experience of stress and coping in real-time. It may offer greater insight into the actual unfolding stress and coping process. Animalia can be adapted as software for retail with the proper self-guiding instructions in a game board fashion to be used in homes and professional settings independent of a facilitator. A version of the intervention should address parenting and caregivers' relationship with children, nurturing emotional literacy, expression, and spontaneous regulation processes as a sustainable practice beneficial for children's development.

Limitations and Future Directions

This dissertation has several limitations. First, the sample sizes for both empirical studies could be improved. Based on preliminary findings related to feasibility, acceptability, and early examination of pre-test and post-test data, the evaluation of Animalia should move forward to a fully randomized controlled trial to assess additional points in time, including physiological measures. Second, the effect of cultural differences among international students was not considered. The study assumes that the ontological design will be universal, given its foundation in human biology; this has to be assessed properly. Future studies should consider comparing cultures. Third, educational institutions have different organizational cultures, this aspect was not explored enough. Future research should consider the values, structural stressors, and protective factors each university brings forward in its relationship with international students. Fourth, the

screening could be improved by focusing on assessing mediation practices, stress treatments, and the presence of post-traumatic stress syndrome in participants to prevent biases. Fifth, the Animalia evaluation should consider narrative studies to assess the effect of the intervention on emotional expression, reappraisals of positive and negative experiences, and evidence on metaphorical reasoning. Such granularity may bring evidence to avoid speculation on the effects of the active components of the intervention. Sixth, both studies were self-funded, limiting the design and scope of the research. More researchers are needed to avoid researchers' bias and funding to improve sample sizes and institutional and individual participation in different countries. Finally, it is important to point out that these dissertation studies did not assess the persistence or trans-gamification effect of the change, clarifying how the Animalia practices may be transferred to other dimensions of daily life, or how much of the change remains. Future research should explore how changes could be extended and sustained over time.

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