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The Contribution of Prenatal Psychology to Our Understanding about Prenatal Dynamics and Fetal Behaviour[*]

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Research in the prenatal human experience has very clearly shown that whatever mother experiences all her life until conception and even more impactfully during conception and pregnancy passes down to the child she is pregnant with. Modern Biology has shown that environmental information and the perception that governs this environment gets encoded in the cell consciousness. A simple thought or act can upset or stabilize the whole planet or... fetal existence. Subtle differences in the motivation of our choices may have the power to bring about radically different conditions in the process of events. A simple thought of fear can lead to a trauma, a disease, a holocaust while a simple thought of compassion can take humanity out of the platonic cave into the healing light of creation. Is there anything we can do? Can we learn from what we already know about prenatal dynamics and move on to design and implement salutogenic processes for the benefit of all involved? The paper will attempt to show the most important findings about prenatal dynamics and fetal existence and how they are connected with our postnatal health and wellbeing from the times of Freud and especially his students who took psychoanalysis from the childhood to birth experience and then to pregnancy and conception and beyond.

Keywords: prenatal imprinting, postnatal health, fetal programming, bonding, maternal environment, non-genetic influences

Introduction

During my two full decades of my clinical work with people from all ages and all walks of life, not restricted to Greece or Cyprus but also to other continents have allowed me to delve into the depths of the human experience and stay aghast in front of the wisdom that is revealed in front of my eyes as plain people uncover the hidden origins of their challenges and at the same time the prenatal—sometimes

preconception—dynamics of their experience.

From my clinical work, I have chosen to use some of my countless case stories to share with you the significance of the primal experience for the postnatal life of all of us.

Today, midwives, obstetricians, clinicians and academics who explore and work with pre/Perinatal dynamics play a most precious role in the evolution of human race. Especially those who are also present during pregnancy and birth are called to offer more than just a safe natural passage from the unborn state of being to the being born one—for the baby—and the support to the birthing mother. Their role has expanded a lot, especially for midwives. Now, a midwife is the first person a pregnant woman will go to and ask for support and guidance. Due to the change in the family dynamics, pregnant parents are not initiated and supported by their own parents or the knowledgeable, wise figures of the tribe or the local society. Pregnant parents seek primal wisdom in pregnancy groups, "get-ready-to birth" gatherings and the such, mostly facilitated by midwives and/or psychologists specialized in the field. Thus, midwives need to explore and delve into the truths of other scientific fields and use this knowledge to better understand and better serve. Prenatal Psychology is one of these fields. Prenatal Psychology has a lot of treasures for her to get and use especially in Primal Health Advancement Programs to work with the baby conceived, gestated and being born.

What Is Prenatal Psychology?

Today, with the term "Prenatal Psychology", we refer to the Psychology Approach that studies the prenatal and Perinatal Dynamics of a Human Being from even before conception to the time of weaning—some 3 years after birth—and finds the origins of whatever health or dysfunction a human being deals with in his postnatal life as a child, adolescent or adult in his primal experiences.

It is a specialty that came from the Freudian Psychoanalysis, which—at its time late 19th, 20th century—revolutionized the way we looked at human behavior. Due to the significant contributions of Freud's students such as Otto Rank and Sandor Ferenczi who first spoke of the birth trauma and the ways it shows again in our living experience, e.g., phobias, sex dysfunction, sleep disorders, etc., the frontiers to our understanding human dynamics were pushed beyond our childhood which was the research area of classical psychoanalysis. More significant contributions were offered by Wilhelm Reich and Carl Jung—also Freud's students at the time—who cast even more light on the somatic aspects and the dream/archetype symbolism. Depth analysis became even deeper. Early 1920s and 1930s was a very active time in what led to what now know as Prenatal Psychology: Nador Fodor & Francis Mott (the umbilical affect) took it even further—or better say even deeper—and spoke about how pregnancy can shape postnatal life actually becoming the Fathers of Prenatal Psychology. The next 2 generations of theoreticians and clinicians that followed in their steps gave us insights that make the "unknown" a known scene. Today, the torch bearing generation explores the depths of the depths, that is conception dynamics as this seems to be the most critical moment connected with the quality of life we experience as individuals and as Humanity. The field is most interesting, holding the keys to a better understanding of who we are and what is behind who we become.

What We Know

During more than 100 years of observation, study and research these, are some of the most important findings we now know.

We Exist Long Before We Are Born

The way we are conceived, gestated and born is critical for who we become as it is the initial template for

the rest of our life. There is a "center" in each one of us that registers all information in this primal experience and beyond. Peerbolte called it "genius", "the Third Factor" the bridge between id and ego, others called it consciousness, and The Turners call it Whole-Self. This center of intelligence becomes aware of life data, emotions, feelings, thoughts or other imprints that refer to the experience of either/both parents.

The Embryologist Jaap van der Waal in his paper "The Speech of the Embryo" makes the following most interesting observations and expands our understanding even more including elements like time, form, gesture, shape etc in the effort of the organism to express his essence: He says:

> The embryo may be considered as a continuous whole or complete self-organized being that seems to fall apart into its bodily constituents and organs. The actual embryo is maintaining order or centering this process… Like every living being, the human embryo is in every phase of development a coherent whole, a unity of form, shape and function interacting with its environment. It is always itself… From conception till birth, from birth till death, the human biography is an organic entity, wholeness.
>
> In all these processes of embryonic development, DNA or genes do not play the causal or determining role… (The genome) is regulated and determined continuously as a process in time by the context and environment of that genome, i.e., the position of the cell within the whole of the embryo.
>
> The embryo continuously changes its apparent shape as a steady metamorphosis of form… Differentiation goes from outside to inside as well, not just from inside (the parts) to outside (the whole).

Shared Experiences: The Contact and the Contract

Whatever the maternal environment experiences is experienced by the unborn baby at the same time, no delays. Any charged events during pregnancy are recorded by the baby and may add to the traumata or relieve certain stress. One of the most crucial experiences are rejection: either total rejection of existence or partial rejection of identity, e.g., sex preference, loss of beloved, violence, not responding to the primal needs of the baby in gestation, isolation. Nijhout (1990) said, "Environmental signals control the switching on and off of genes". And, Thaler (1994) said "Organisms under stress are able to actively alter their DNA and create new genes in an effort to accommodate environmental challenges".

When a pregnant woman experiences an event, she can be reacting in a positive, enhancing way (joy, calmness, satisfaction, pleasure, security, etc.) or she can be reacting in a negative, diminishing way with depression, fear, terror and panic. On the physical level, enhancing emotions can trigger massive rushes of either endorphins of pleasure or trauma can trigger adrenalin and noradrenalin hormones in her blood which are then passed from her body through the placenta to the little body she is growing for her baby. If the messages are endorphin-based hormones, then baby can continue her or his constructive, creative work. If the messages are catecholamine-based hormones because of mother's trauma, baby gets disturbed. As Verny (1981) says "The baby stops the creative and goes to the defensive mode". And as the Turners (1988) explain: "I, the baby, am born with mother's hypnotic trauma trance, non-conscious belief that these events are still happening as well as with the hormonal saturation which causes the accompanying specific sensation throughout my life".

Thus, my in initial prenatal contact becomes a contract activated and re-activated again and again in my life and becomes the structure, the innate core source of my pathological feelings which may then be reinforced by later events.

Frank Lake, William Emerson and other prenatal pioneers have clearly shown that shocks or deep traumas in the 1st trimester can be responsible for the psychoses that torture people in later life, while 3rd trimester traumatic events can be blamed for most "normal" neuroses.

Let's look at one of the cases:

Marina. Marina, a woman in her late thirties, mother of two girls, had a great difficulty with her female manager. In the first minutes of the session, she complains:

> My recognition from others is being threatened. I can't define my job. My manager knows how to push me out of my center. What she wants to tell me is, "You aren't good at what you do!" She is a threat for me. I am angry! I do more than I can to defend myself. I am in despair! I can't stand myself! I feel my mind is exhausted! My mind works so hard that I feel my brain will explode! My mind works incessantly! It is being burnt out!

Marina's prenatal context. Her parents were not married when she was conceived. Her mum, a young lady at the time, fearful of her own father reactions to the news of out-of-marriage pregnancy and fearful of the social stigma has abortion thoughts. Then, when she communicates the news to her partner, he reassures her that they can get married and have the child. When Marina's mother discovered the news of pregnancy, Marina's brain was at a crucial moment of development. The whole stress seems to have concentrated in her brain/head.

Marina's contact.

> The grey creature (the fetal brain) looking with eyes wide open at a dark environment. There is a light on top. It must be at the time when mother was pregnant. This creature must fight to live. It must save itself. Somebody is threatening it. No, it is a thought that is threatening it. This thought is causing it pain. It is that they don't want it. As if someone wants to kill it. I don't feel it's mum. It must be her fear of the other people. Mum also fears for her life. She is afraid that they will beat her; they will hurt her; they will make her feel bitterness. Her fault is that she reacted to what others wanted her to do. She tried to live free. She fell in love; she had sex and now this pregnancy. She is not married; she is young; she is at that age that she is not fully independent and has to tell her parents. She is afraid of her father. This thought/fear that she will be beaten and hurt makes her think of getting rid of this thing, this child. She doesn't want to let it grow because if she does her own shameful act will be seen. People will accuse her of being a whore. She doesn't want that. She didn't make love out of low emotions. She had simply let herself to a man she loved. But she has never learnt how to fight for her rights and her desires. I love you, mum. But, Mum is in her panic. Her mind doesn't listen. Somebody else allowed me to live. Mum must be in such great panic that she doesn't listen inside. It's only when dad reassures her that he will be by her that "We want what has happened to us. We don't care what the other people will say!" that she calms down.

Marina relaxes when her father speaks to her mum and supports her saying: "Our baby needs to grow. It is our baby. It is the seed of our love. We want this baby and we love it". At this, Marina says:

> Marina calms down and stretches a little bit. (She was crouched down in fear). There is somebody who thinks of her. Mum is happier. Mum feels safe in the arms of dad. Dad is very strong. There passed many years to realize that dad was sensitive too. I thought that dad was omnipotent. I felt he could be the Prime Minister, a king, a teacher any position of authority. He deserved it. I was wondering why he wasn't in such position.

Some further analysis revealed:

Marina (speaking to her parents):

> You will love me but I'll tell you if you love me. Nobody persuades me. I'll test you. I'll stretch you to the limits. I want you to deal with me. It is selfish but I don't know it. Anyway, I didn't ask you to hurt me. You didn't even ask me if I like being hurt. You have never paid any attention to me. You have never cared about me. How do they dare to ask me to respect you? When I experienced that danger (mum wanted to have an abortion) it was your fault. You should not have let me go through that danger. You shouldn't even have thought of abortion. You have to convince me with your deeds that you love me.

Whose Feelings? Whose Perceptions?

The moment, the maternal environment experiences a stressful situation, the (un)born baby gets the information and this "contact" influences the way the baby sees self, others, the world leading to a "contract"

that is way the baby will relate to himself, others or the whole world after birth.

The sequence is that every time, through (speaking in the 1st person) my mother's charged emotions and charged thoughts, my environment generates a threatening message, I, the unborn child, although I may be unaware of the scenarios that cause the specific maternal response, am well aware of the physiological consequences and sensations of this response. At that moment, I interrupt the creative work I do and the positive feelings as well as the positive ideas I have of myself. Plus, all the positive conclusions I have had so far in my life all come to an end and my threatened existence will do its best to survive.

At the same time, the way I think of myself gets replaced by sabotaging self-judgments and diminishing decisions. My perception of the world as a safe place changes into images of a threatening place to be, a place I need to do something to protect myself or the ones I care about.

As a result, I either become armoured and adopt a defensive stand (usually by becoming offensive myself) or as is in cases of deep rejection, I make a diminishing decision against myself, boycotting and sabotaging my own existence in every possible way.

Maria's prenatal context.

During gestation, I felt hungry. Something stopped food from flowing to me. I could see food coming, then it sort of diluted. There was something filthy and ill-smelling. It is not food. It is poison. It is anger. Mum is angry at dad. All this is heavy and difficult. Mum has realized that she will be alone and unsupported in her experience as a parent. She needed more love and affection from father. Father looked at all this as a simple process. Mum feels deserted and unsupported. Many, many siblings of mine have died because of this. I am the only one who survived. Every time, it happened, I said: "Be strong, my brother, please". And I begged for them to stand. And every time they perished.

Maria's contract.

I died, too. I cancelled my existence. I didn't exist. It is so difficult to exist in life because I need to try hard to sustain life and I need to try even harder to earn some joy in life.

Maria is the only child, conceived after medical support. She has serious sexual difficulties as she has practiced so hard to block all entrances to the inside of her body to protect herself from poison invading her.

Other times, I turn into a prenatal therapist making decisions to support my parents so that they can survive or be emotionally happy—so that I, their child, can share in their peace.

Joan's prenatal context. At the moment of conception, Joan's father—a young man at the time, had lost his father at age 16. He was the sole support for his mother and a younger brother and sisters. In his effort to protect himself from misunderstandings and social criticism and to guarantee that the family barbershop—once run by the father—would continue to provide for all the family, he had adopted a very serious persona.

Joan's contract. As a little girl, Joan used to tease her father and do hairdos. As an older kid, she always followed him in the fields or on bike rides. As a young lady, she would always support him when mother complained. As a young adult, she would never say "No!" to him and his decisions. Joan could sense her father's sorrow and deep loneliness and promised to do whatever she could to cheer him up or protect him from being sad. A contract that she honoured all her life up to now.

Pink and Blue Fantasies

If the situation is one of rejection of my sex or failure to recognize and respect my identity, my despair can lead me to forget who I am and I am condemned to follow the lifestyle dictated by my parent (dissociation).

All these decisions made at that moment shape my future and constitute the quality of life I will lead. The more positive, enhanced and respectful such contact is, the more positive, enhanced and balanced contracts will be energetically synchronized.

Elena's prenatal context.

> During pregnancy, mum wished for a boy child to please her husband. I don't like it. It's unfair. Why should she want a boy?

Elena's contract.

> I will prove to her that I am better than a boy. I will assert. I will demand. I don't want to be in this mother's consciousness. But I will stay. And I will be strong. Because, how can I otherwise prove that I am better?
>
> When I am born, there is such disappointment that I am a girl. I'll get revenge. I will show everybody that I am better than a man. And, I have done it! I am better than many men I know. I will fight for this. Nobody will offer this success. I'll use my power.

Elena suffers from hypertension. In her late fifties, she has earned a place in the academic world; many successful published books and high blood pressure.

The Eye Contact that Makes a Difference

At the moment of birth, when the first contact takes place on the physical plane through eye-to-eye contact—as Michel Odent mentions—there is another contract agreed that is to last for a lifetime—or when unbalanced, may lead to dysfunctional contacts throughout my life. This perinatal contact becomes the contract that is to dominate all relationships with people, business associates, friends, or intimate partners.

The first days/months, if mother and baby are together, contact and contract are OK. But, if they are separated—as it usually happens, e.g., newborns are kept in separate rooms, neonates may need emergency medical care or mother returns to work too early, then, the disturbance of contact may lead to a contract of loneliness that can last a lifetime.

Gina's prenatal context.

> My mother does not want to have a baby. She thinks I am very ugly. (How ugly can a newborn be, I wonder?)

Gina's contract. Gina can't get pregnant.

> My mum does not hug me; she doesn't feed me when I am hungry; she doesn't change my diaper. Mum is very tired. Dad never helps. I feel ugly, empty of love, lonely. I will try to find all I miss from other people; I have always felt my body is awful; I try to hide my ugliness because if they see that I am ugly they won't want me. If they don't like me, then I will be alone and being alone is what scares me. If I let people come close, they hurt me. So, I keep them at a distance; I change to fit to what the other wants me to be; I don't like it; I don't want to believe that it happened; I wish I could stop being so angry; I wish I could stop causing that pain to myself!

Welcome and Thrive or Else Perish

Would it be too risky if I thought of the many unfortunate cases when unwelcome conceptions or pregnancies take place during which the child and the mother join together in an environment of total or partial rejection or even an environment of ambivalence which ends up to a very poor quality of life, a punishment for all involved?

Fairytale images of inferno, of evil witches and evil stepmothers, of hot ovens ready to roast Hansel and Gretel and so on remind us of the instances of such contacts being equal to punishment.

Sometimes, there are also decisions of overestimation—which is also another term that implies imbalance—either coming from the parent projecting the satisfaction of his need onto me the child or from me the impotent child overvaluing the power of my parent ending up with a lifetime that has lost harmony. I become either a prenatal therapist or "the hero" as C. G. Jung has described me or the impotent cripple. Joseph Campbell wrote *The Hero with a Thousand Faces*—the discovery of comparative mythology. Do my Prebirth contacts become my lifetime contracts realities or are they myths?

Every time I experience a positive or negative contract with myself, I prove what I believe I am.

When the contract is with others, I fulfil its content in any of these or all the following ways:

Positive ways	Negative ways
Fulfilling our destiny	Losing ourselves
Bringing balance to life	Exhausting ourselves
Creating	Even destroying ourselves
Developing	Being who they want us to be
Enhancing life	Protecting or saving others
True to myself	Obeying their wishes

When the contract is with the world, it may be a positive or enhancing contract, e.g., the world is a safe and empowering place to be. I can be creative and enjoy life. Or, if I believe the world is a negative or diminishing environment, e.g., the world is a threatening place to be. I spend all my life defending myself against the bad, diminishing, some may even say evil world and I may die before I live. Such contracts last for a lifetime unless changed or healed. The blessing is that Prebirth Psychology is a tool for such healing.

Non-Genetic Influences that Stay and Stain

Parents provide nongenetic contributions that dramatically influence the development of the offspring and have profound ecological and evolutionary implications. By influencing an organism's ability to adapt, they may influence the course of evolution (Pennisi, 1996). The non-genetic factors including prenatal environmental influences on the expression of Tourette's syndrome has been shown by S. S. Wolf et al. in 1996 for example. He says among others that "Maternal effects provide a powerful avenue for (altering) the course of the future by adding information content and material content. That content can be... anything that can influence how an embryo develops" (Wolf et al., 1996).

Anna. Anna is a young woman who came to the office in 2003 suffering from depression and nosophobia. Six months later, she felt much better and interrupted therapy. A couple of months later, she called to announce the news of her first pregnancy. She sounded rather numb on the phone. A few weeks later she asked for a session. When she came, she was 3 months pregnant. Her looked a mess; black bags under the eyes and much thinner than I remembered. She complained that she couldn't sleep at night. She is in fear that something is going to drown her. Her words: "There is a war going on. Who is going to win? Either the baby will kill me in my sleep, or I will win". Because of this war she had ceased to eat in her effort to beat the baby who she holds responsible for the drowning sensation. She hopes that the baby won't last and will die of hunger.

Working on that day, she realizes that her drowning sensation had nothing to do with the baby, but with her own unresolved issues with a boyfriend in the past; a relationship she had interrupted because she felt drowned. That was also a repetition of what she felt in her relationship with her father who obsessively controlled her. In her relationship with her father, she again had felt that drowning sensation. In her mind, at

that moment of her pregnancy, there was one thought: "If I give birth to a boy, then we'll have to name him after my father-in-law. But, that was the name of my ex-boyfriend. I want to forget all about that relationship but having to use that name again, again, every day, it won't be easy. This thought drowns me. I don't want this child".

On that day she asked for orange juice and toasted bread to eat. She looked very relieved. She disappeared again. Half a year later, I received a call from her. She told me that she gave birth to a boy with cesarean in the 35th week of pregnancy. On her regular visit at her doctor, the doctor diagnosed that the sack was dry and on that same day she had the cesarean birth. The baby was born with tense muscles, griposis, refused to have any food, stayed at hospital for two months, where mother could visit him for only one hour a day. Mother didn't breastfeed him even for one day. She asked: "Is it because of that?" Today, the child is one year old and is still under medical supervision. And, he has already been diagnosed with mental retardation.

Maternal Smoke and Other Toxic Stories

Maternal toxins such as cigarette smoke, alcohol and drugs have a debilitating effect on the embryonic development and so does all chemical content of toxic nature. This is well known and recently very fervently investigated. When a pregnant mother smokes (active smoking) or when she is in an environment where others smoke (passive smoker) the unborn child is affected with lifelong consequences. We know that despite the well known averse consequences in pregnancy since 1972, many pregnant parents continue to smoke. We also know that even if only the father smokes and even if he is absent from home during the day or if he smokes out of the house (in the balcony) nicotine still remains in the tissues and influences the wife sharing the same bed at night. Women who are pregnant may also be exposed to secondhand smoke apart from homes, in vehicles, the workplace, or public areas. More than 126 million nonsmoking adults continue to be exposed to secondhand smoke and current estimates suggest that almost 60% of children, aged 3-11, are exposed to secondhand smoke (U.S. Department of Health and Human Services, 2006). Thus, exposure to cigarette smoke remains a common and hazardous in utero exposure. There are above 4,000 xenobiotics (foreign substances) found in cigarette smoke causing a lot of placenta challenges and even more for the unborn. The impact of such chemical intoxication is not restricted to the human body development but goes beyond that, affecting the emotional, mental functioning of the organism. Maternal smoking during pregnancy is a risk for abortion (Castles, Adams, Melvin, Kelsch, & Boulton, 1999), preterm delivery (Castles et al., 1999; Kaddar et al., 2009; Shah & Bracken, 2000), respiratory disease (Cook & Strachan, 1999), immune system difficulties such as asthma and allergies (Prescott & Clifton, 2009), and cancer later in life (Doherty, Grabowski, Hoffman, Ng, & Zelikoff, 2009), alterations to the development and function of the placenta (Einarson & Riordan, 2009), delayed psychomotor and mental developmental scores as measured by the Bayley Scales of Infant Development (Kiechl-Kohlendorfer et al., 2010), may negatively impact a child's future speech and language development (Benasich & Tallal, 2002; Kable et al., 2009; Molfese, 2000), is responsible for physical aggression during early childhood (Huijbregts, Seguin, Zoccolillo, Boivin, & Tremblay, 2007; 2008). Sudden Infant Death Syndrome (SIDS) is connected with parental smoking (Flemming & Blair, 2015). According to the research, smoking "exposure may lead to a complex range of effects upon normal physiological and anatomical development in fetal and postnatal life that places infants at greatly increased risk of SIDS". What the researchers have also noted was the increase in maternal smoking from 50% to 80% among the population that presented SIDS. The question posed here, is what is the driving force behind this maternal behaviour? What is

it that despite the public awareness concerning the harmful effects of parental smoking makes pregnant mothers smoke and endanger their babies? Other research has shown that "newborns and infants born to smoking mothers had higher arousal thresholds to auditory challenges than those born to nonsmoking mothers. The impact of exposure to cigarette smoke occurred before birth" (Franco Patricia et al., 1999). The hypoxia experience for the unborn child, associated with respiratory challenges (respiratory arrest) leads to a highly stressful primal experience that is to have lifelong effects for the baby postnatally—sleep apnea, brain or neurological disturbances, unusual facial characteristics, agitation, mental retardation, low stress tolerance, increased metabolic diseases risk, decreased cognitive functioning even death. Underweight births and prematurity are also among them with all the unpleasant consequences. With the advances in epigenetics, today, we are also aware of the epigenetic mechanisms that prenatal environmental factors like stress, prenatal drug exposure, etc., can lead to changes in gene expression (DNA methylation) from generation to generation with not only lifelong effects any more but generations long effects (Maccani & Marsit, 2009). Suter and colleagues (2011) say that "maternal tobacco use is associated with aberrant placental epigenome-wide DNA and gene expression", with critical consequences for fetal development and postnatal health.

Associated with smoke and drug (cocaine, etc.,) abuse, today, there is another factor that needs to attract our attention. This refers to the use of anaesthesia or opiates used to alleviate pain during laboring. Maternal Methadone use is widely used and the research data today shows that it is responsible for the development of neonatal abstinence syndrome and it has serious implications for healthcare resources (Dryden, Young, Hepburn, & Mactier, 2009).

Research in the field of prenatal psychology today has described Fetal programming connected with cigarette smoke or smoke/drugs in general.

Smoking & Fetal Programming

Fetal Programming is the theory developed by Barker in 1980s and presents a model of "gene-environment interaction" that explains the influence of the in utero environment on the molecular character of development explaining that an adverse fetal environment (scarcity of nutrients, stress, viruses, drugs, trauma and smoking among them) may result in a negative or poor maternal forecast and a postnatal environment of scarcity. The baby is forecasted to thrive in a poor environment. Most of the stress for the unborn child—but also any human organism—arises from deprivation of the life essentials: oxygen and nutrients. The smoke captures the oxygen which is reduced when it reaches the baby through the placenta. This becomes a cause of stress for both the mother and the unborn. The heart rate increases and the organism tries to work out changes that will guarantee survival. This implies harder work on the part of the embryo who needs to support his own existence. The psychological pattern that arises here can be something like "I need to work hard to support somebody else who then can guarantee my survival" That is "I need to support the maternal organism because if the maternal organism cannot survive, I am lost as well". Furthermore, concerning the prematurity that is observed in such cases, we could interpret this stress faced by the unborn as an embryo language communicating "out of this environment the sooner the possible".

In psychological terms these seem to be the consequences:

(1) They reproduce the pattern "I need to work hard to maintain something of value". This shows in relationships. They stay in symbiotic relationship much longer than Nature has it (that is 4, 41/2 years of age). What later on happens is that they stay in partnerships (intimate or business) much longer than healthy

"working hard to save and/or support the relationship or situation providing, resolving doing what it takes to make a relationship stay so they can survive";

(2) They present unresolved issues with the father;

(3) They have low stress tolerance;

(4) They present learning challenges, lower intellectual performance (Lundberg et al., 2009) and lower academic performance (D'Onofrio et al., 2010);

(5) They develop depression;

(6) They suffer from anxiety;

(7) They show ADHD (Knopik et al., 2010);

(8) They show conduct problems, or criminality traits (D'Onofrio et al., 2008);

(9) The situation is even worse when we replace cigarette smoking with drugs as the use of drugs implies even higher stress levels during the early primal experience that the born baby/adult wishes to get rid of.

Theodosia. Theodosia, a young lady in her early thirties is mother of one boy, she is not satisfied with her marriage, suffers from asthma. She records:

> …Hugging, fondling, communication? I don't recall anything. I remember father more. Where is mum? Mum may have not wanted children. She may not have wanted me. I was the replacement of my sister who died 40 days after birth. Mum got crazy. I was born right afterwards as a replacement for Maria. I feel horrible. Why should I feel like I am a replacement? I'd rather she didn't give birth to me at all. She gave birth to me to cover up her own pain; to cover her void. Now, she looks after the boys. Mum, went through depression then. She used to talk and talk and talk to Maria. She sort of made me love her, too. I had never seen Maria. I couldn't share her pain. I myself try to be a replacement. And when the other person doesn't need me I leave. And, I feel betrayed. People take my support and whatever they need and then they pretend I don't even exist. They step out of the relationship. I may be a replacement for my husband too like when his mum abandoned him. I stay in the relationship because I don't want him to feel that I also desert him.
>
> When pregnant, my mum smoked. And I asked her, "Why did you smoke? Didn't you know it was bad for me?" (Her mum was a midwife). She replied "After the labor", she said, "I asked my doctor for a cigarette". Before my birth, mum put me in danger. After birth at my 20th month, I was diagnosed with asthma.
>
> During pregnancy: I feel I am in danger. I can't breathe. It's the cigarette. I need my mum not to smoke so that my little body can breathe freely in the womb.
>
> I would like my mum to caress her belly so that I can feel she wants me; she loves me. I feel rejected because nothing happens to show me that she likes me. She wants me as a child but just to see me exist. I don't feel she is by me. She has never been near me. I'm always there to help her. I satisfy all she needs. I solve all her problems. I am there for her. She has never asked me if I have ever had any problems… I will get born, I will fill her void without thinking of myself… Who am I?… the 3rd or the 4th child?…

Fetal Alcohol Syndrome & Fasd

The world-wide statistics for the fetal alcohol syndrome is 1.9 per 1,000 live births. Most of the parents that do alcohol abuse also do other substance abuse (caffeine, nicotine, diazepam etc.,) it goes without saying that the above mentioned unpleasant consequences associated with smoke are also to be observed when mother is on the drink or even worse when she is alcoholic. Although the ancient classics such as Plato and Aristotelis advise against alcohol at conception or pregnancy, and despite the Holy Bible saying "Behold, thou shalt conceive, and bear a son; and now drink no wine or strong drink... (*Judges* 13:7)" unfortunately the numbers are high. For centuries, there was a suspicion that alcohol was linked to teratogenesis and such evils but it was in the late 1960s when Lemoine started publishing the first research data on the understanding of the fetal alcohol syndrome and the ways ethanol affects human development. When pregnant mother drinks alcohol

even small quantities—that is more than 1 glass of wine/week—this is experienced as "poison" by the unborn child. The sequence of this stressful primal experience leads to Primary and Secondary disabilities for the baby born. Among Primary disabilities we list brain damage, low academic capacities, learning disabilities, impaired mental functioning and low living skills, communication/socialization skills and adaptive behavior levels. The Secondary disabilities include Mental Health Problems, Disrupted School experience (high rates of drop out, suspension or expulsion), trouble with the law/criminality traits and violence, conduct misbehavior (high percentage of imprisonment), inappropriate sexual behavior, alcohol and drug problems themselves (perpetuation of the challenge), dependence (living), unemployment due to problems with employment and problems with parenting leading to more vicious cycles (Streissguth, Barr, Kogan, & Bookstein, 1996), facial dysmorphology, central nervous system abnormality (Abel & Sokol, 1986), neurodevelopmental disorders (Sampson et al., 1997).

Psychologically, the baby born later on:

(1) develops a negative self-image;

(2) a narcissistic personality emerges;

(3) There is over stimulation of the system which is associated with high degrees of anxiety or agitation;

(4) may present eating disorders;

(5) metabolic or cardiovascular disorders;

(6) or psychosis.

Apart from those the pattern that seems to emerge is that the person with FAS learns from very young to live on the minimum. The high toxicity levels reaching him through the placenta make him to lower his survival needs levels, the system gets contracted to protect the organism from the toxicity threat. This interprets into a human being who sees threats in the environment, or sees the environment as an enemy from which he either needs to isolate to survive or attack or resort to the prenatal survival mechanism of "the minimum is enough" and live a life of poverty or of minimum reward. This prenatal contact/contract is far from the stoic philosophers of minimizing the needs to develop virtues as it is not the result of spiritual evolution but the outcome of a traumatic experience retriggered and relived. From such a prenatal background, human relationships—both intimate and at work—are very challenging and a lot of healing support on many levels needs to be offered to bring the system back to balance before it makes way for a new generation to come and perpetuate the problem due to epigenetic changes.

Themis prenatal context. He is the fourth child in the family. He came many years after his brother and sisters at a time when mother expected to be free of the responsibilities of raising children and enjoy the comfort that a good financial condition could offer. Themis records:

> My mum thinks that her reproductive cycle has come to an end. She doesn't want to be pregnant. She already has three kids. She doesn't want a fourth.
> ...I can hear it, I respect it but I want to survive. I'll get hold of my mum. She is going to have a good pregnancy. I will stay calm. I will go with her biological rhythm. I won't cause any sickness to her. I will get born very easily. I will be a boy so that she can have some balance among the kids (She had one son and two daughters already). Because I will be a boy she will have the chance to give me the name of her father which she wants. I won't have any behavior problems. I will eat my food, I won't be attached to her. I'll be independent as soon as possible so that I won't take up her time or energy and I will try to make her happy with my existence. I'll accept any replacement mother in practical issues. My sisters will help me with the food and clothes. I'll ask my brother and sisters about school questions. I'll even make mother proud. I'll be very good at public relations; the environment will accept me; I will be good at fixing things; I will be an excellent cook. And then he finishes by saying: "This is just to talk her into accepting me. If I could I'd like to run away

from her; to get rid of her. Be independent, free. I don't want to be either the cause of sorrow or the cause of joy".

Themis contract. Themis says that he'd like to have three children: two girls and a boy. He also aborts a fourth child. Themis aborts himself: Themis is in his mid-forties, trying to get out of drugs. He lives in extreme poverty conditions, no friends, no partner, no children. However, the above is just a façade, a survival mechanism set prenatally to seduca the mother into not aborting him. But deeper there was fear and rage that was repressed. Some further analysis revealed this:

Themis shouts:

> I'll fuck you all off. I'll give you a hell! I'll ignore you! I'll disappear. I'll push you too far to see where I can go and to see to which point you can put up with me. I'll break all relationships to show my powers.

This is very important to bear in mind. We may see happy faces in childhood and children that are the parent's joy. We may get tempted to jump into conclusions that the theoreticians and their conclusions as stated above are proven wrong. You need a very deep way of looking at things and distinguishing the phenomenon from the underlying causality, the mechanism from the underlying repressed trauma. This was also obvious in Marina's case, above.

The Prenatal Origins of Disease

A prenatal experience is always discovered behind a dysfunction or as an underlying cause of a disease (e.g., panic attacks, depression, cancer, blood pressure, addictions, phobias, etc.) triggered when similar circumstances to those prenatally re-appear postnatally. As mother provides the baby with both genes and prenatal environment, associations between prenatal risk factors and offspring disease maybe attributable to true prenatal risk effects or to the "confounding" effects of genetic liability that are shared by mother and offspring (Thapar Anita et al., 2007).

Dina's prenatal context. When Dina was conceived, her mother felt very unhappy. She didn't want to get married and have children. She was obliged to get married because her life conditions were so difficult. She was very poor and she already had a child. When pregnant for a second time (with Dina) her mother couldn't handle it. Being poor, unhappy and so exhausted; having already raised her younger child; and having to work to survive all the way through her pregnancy; no hospital to go to if needed; she thought of Dina-baby as a problem and wished for this child to die because she was nothing but an overwhelming problem.

Dina's contract. (in her own words) Dina suffers from depression.

> I reject myself; I was born unworthy; people feel disgust when they meet me; they hate me; they use me. I have experienced indifference and lack of care; I have experienced severe beatings; and, from my birth on, I live in curses and hatred. I feel rejection; I feel hatred; I feel so miserable; my body shrinks; I suffer; I feel lonely; I think that I'll die; I am so much afraid; there is always an invisible threat to my life.

Ioulia. Ioulia is a young lady in her early thirties who suffers from anorexia nervosa. When we were working with her prenatal profile, it came out that she was a twin pregnancy. The other baby, a boy, didn't make it. She had accused herself of having all the food, preventing her brother from having any. She punished herself by depriving herself of food, after birth.

Note. In this case, the environment made things even worse. Mother, who didn't know that she was pregnant with twins, had a shock when at labor the second baby came out black and blue and died. Not forgiving herself for not protecting him, mother gave her living daughter two names; one for her and one for

her twin brother; she made her study two different faculties; she pushed her to learn two foreign languages and two musical instruments. She asked her daughter to live two lives.

Mara was an unwanted birth. She was rarely held by the mother, who according to the recordings of the daughter, "Didn't want to be soiled or have her immaculate dresses destroyed by the baby". Nursing was allocated to nannies. When Mara was learning toilet habits, mother used to prick her buttocks to teach her the lesson. Mara's pain was so great that it was at that moment when she made the decision that she would never pass this pain to a child. Mara grew up. When entering puberty, a beautiful young lady by then, attracting the attention of males, she developed vaginal cancer and had a hysterectomy (to make sure that no babies will be born by her and suffer). Mara at the age of almost fifty entered therapy wondering why she used to pinch the little kids in the nursery school she directed.

From Parent to Child: The Heritage that Locks or Evolves

There is a thread that connects all people born in the familial tree. And we can trace certain patterns as they evolve within the environment (family, society, Humanity). The egg is the carrier of such transgenerational information as it links the history of all people born in the line holding and delivering the information from one generation to the next. Any unresolved traumas or issues travel down the history—or better say—the egg lane and are handed down to the next generation to deal with and hopefully to resolve and evolve. As epigenetics today show stress information can alter the DNA methylation and the distorted information/DNA/human genome can be delivered to the next generation or the humanity.

What is also known today is that mother or better say the maternal environment passes down to the fetus her own perceived attitudes about life. Mother's emotions (fear, anger, despair, guilt, but also joy, pleasure, etc.) are associated with biochemical alterations. As we live and experience our life in the world or with others in the world, we continuously respond emotionally and/or mentally to the environmental signals and we release such "signal" molecules into the blood, which by themselves activate receptors in answer to the stimuli provided. We could say, that the unborn child through this process gets a preview of the environment he is going to be born in later on and gets prepared for postnatal survival through behaviour "memories", "fetal programming" and fetal "filters". The unborn child learns life skills and relationships. The quality of such stimuli or prenatal education that the unborn receives determines the Quality of Life this person is going to enjoy postnatally. This passing on of information as Grigori Brekhman (2012) states in his Wave Theory is facilitated by the water molecules (almost 95% in the fetal body and 75% in the maternal body).

Heal Thyself When There Is Still Time

There is a triggering of any unresolved issues carried on by the pregnant parents from their own primal experience as soon as the conception of their child starts. And an opportunity for both generations—that making space for new life to emerge, and the baby emerging—to resolve, heal, develop and mature. Any healing support during pregnancy frees the future of the child allowing the child to reach his full potential.

Costas prenatal context. He is of Armenian Origin and the mother conceived at a historical time of political and social disturbances. Mother was pregnant with twins. When, she communicated the news of pregnancy to her partner—not married at the time, her partner fled the relationship abandoning the mother and the unborn children. The twin brother was born dead.

Costas' contract. Costas is a businessman who faces company problems feels deserted in his business chaos; deserted by his colleagues and helpers and deserted by his pregnant wife who stopped working in their

joint enterprise. He says:

> Mum herself deserted me. She allowed herself to be persuaded that she must get rid of these children (twin pregnancy) because father imposed that on her. And, for quite some time, she was persuaded that she didn't need the creatures she had in her. I can't live without her! When you are in such a phase of your life and you need the other person to live and the other person doesn't want you, you desert the other. The little fetus faces the fear that he won't survive. The fetus feels insecure.
>
> (To the mother:) You cheated me. You deserted me. I feel angry and deeply sad for the rejection and the desertion that you didn't see clearly and you didn't do what you wanted.
>
> (To the father:) You deserted me; not wanting my presence. He thinks it is not the right time. He avoids his responsibilities to support a child… I feel indifferent. Dad's rejection didn't unsettle me as much as mum's. Mum was pregnant, she had the power to decide.
>
> Wait until I survive and then you'll see what I will do. I just wait for things to go on. When I am self-sufficient then I'll take the course of my life in my hands. Now I am not. I can't protect my life. A child is not an object that you can own and control.
>
> (To the twin brother who didn't survive:) I thought you had deserted me too. Now, I know that you didn't cheat on me, but that you just chose to have control of your life. It was your right. Perhaps you knew better!

Costas re-experienced the same prenatal trauma when expecting his daughter. He experienced high levels of anxiety fearing for his wife and daughter loss (reliving the twin brother loss) and falling into the confusion of projecting (unconsciously) his promise to the twin brother on his daughter, seeing her as the coming of his brother.

We have the years between our birth and our time of us becoming parents to heal any unresolved issues connected with our own conception, gestation or birth so that we do not carry them on to our children when we become their parents. The same holds true of professionals like teachers, social workers, medicals, midwives, psychologists/psychotherapists... Human conception, gestation and birth is a sacred process that asks for professionals to have cleansed themselves from their pre/Perinatal issues. Special attention should be paid to healing the violence trauma inflicted on people born caesarean or those conceived IVF among others.

Conflict of Interests?

There is often a conflict of interests between pregnant parents and the unborn baby, esp. when there are unresolved issues at play. The professional who offers his support needs to be well experienced to distinguish, help balance and wisely guide. As our thoughts and acts matter, the stories exchanged in pregnant couple meetings can become poison to other pregnant couples. The person in charge of such prenatal groups needs to know a lot about group dynamics and have a huge experience to discover the hidden pre/Perinatal dynamics that can be at play in each environment. Also, to have the wisdom to discern any interest conflict based on unresolved issues.

Penelope. Penelope's mother was in love with one man but married another. When pregnant but not in love with her husband she didn't want the baby. She tried all recipes to abort; she even fell down the stairs. Despite the efforts, Penelope was born. Father used the baby to keep his wife in the marriage. Penelope suffers from kidney cancer and depression.

> When mother was on the third month of her pregnancy, mum wanted to abort. She deliberately fell down the stairs. The environment in the womb is so unpleasant. Are you my mum? Why don't you hug me? Why don't you kiss me? Mum suffered from depression… My kidney looks like a fetus. It is curled up in fear. The fights in the house; my dad; why is he attacking me? He may not be able to put up with the depression of his wife. I feel so frightened. I can't scream. I can't make my existence known. I exist. I feel I'm a little rubbish… I hid my enthusiasm for life. I hid my appetite (She doesn't

actually eat enough to survive). I hid my joy. I don't know what joy is any more. I was terrified. How can I face life? I swallowed the tears and they burn my throat. Mum said she didn't want the child. She asked dad to give her money for an abortion. Dad refused. If I wasn't born, I would be better off. It's this sadness that affected my kidney. I don't like being a nothing. Why didn't I react? I'm glad that I haven't given birth to any children.

Bonding Starts Early

Life is always there. It does not begin it does not end. It just is, changing forms but always registering information. We can't waste any time or the 9 months of pregnancy to welcome the baby born.

Bonding starts before conception and its quality is at play behind all and any relationship we establish with ourselves, others or the world and life. A high quality bonding is based on immediate response to the unborn baby's primal needs. Otherwise the baby feels lonely, neglected or abandoned, in despair, loses contact of his true identity, disconnected from his internal rhythm, etc., and a lot of healing work needs to be done to re-establish the balance lost.

Stalo's prenatal context.

I tried to come to my mother and father several times in the past, but they always sent me away. It was never the right moment. They sent me away through miscarriages. I felt bad because I should have known better and come at a more appropriate moment when they were ready to accept me. But, I insisted. I was in a hurry to experience life… I want to feel laughter, joy, air, play. I don't like mum's molding. She is not a good teacher. She doesn't teach me in a way I can understand. I want to learn through experience. I want to touch, to experience. This is the way I learn.

Stalo's contract. She is a divorced mother with one daughter. She experiences lots of emotional challenges.

And Now What?

We need to reflect what we do and what our motivation is behind our acts or research as academics. Although in the 19th and 20th centuries, science was the big voice, today we are to balance the Mind and the Heart supporting young professionals and Academics who have Feeling Minds and Thinking Hearts to progress and evolve even more, so that they can advance and share wisdom.

Besides, with the multicultural environments of present reality, professional education needs to encompass all cultures and ethic practices to promote understanding and co-existence.

We need to redesign our services to the society and implement community programs based on the new understanding so that the quality of life is guaranteed. Taking into account Salutogenic principles and modern complex theory we can conceive, design, implement and operate Primal Health Advancement Programs to work with the baby in the womb. During the next 50 years, we are called to resolve huge issues such as the energy challenge, pure water, food, environmental issues, poverty, terrorism and violence, disease, education, democracy, population. The answer to these challenges lies in the womb, or even better with the generation now living. How can we each contribute?

Healing is not forgiving our supposed enemies for the traumas they have inflicted on us. It has to do with understanding, acceptance, connecting with our essence and remembering who we are and why we are where we are.

But, most of all it has to do with appreciation for how enemies and friends have served us perfectly to grow, develop, mature and evolve—anelixis.

When this happens, the way of anelixis opens. The energy flows and life gets easier, brighter, more constructive and joyous leaving this trace on the World Non-Conscious for all other consciousness to benefit.

The key is working with all people to become aware of their prebirth origins, trusting them and their processes of life and death. The psychologist, the medical doctor, the educator, the scientist, the researcher have a treasure in their hands which can help them understand the dynamics of disease and health, pain and joy, disaster and creation and, above, all learn about the wisdom of soul dynamics.

That's Where Pre- & Perinatal Psychology Can Help

Expanding from the personal to the universal, as more and more of us make steps and heal ourselves, this healing energy impregnates the environment in which it appears and touches whoever is in this environment. As more and more people become awakened and remember, this can show the path for others to walk. Health Advancement Programs, educational modules, conscious parenting and therapeutic work can do miracles. As more and more of us realize the content of the principles of welcoming, acceptance, trust, respect, empowerment, support and love, the more we will contribute to agreeing contracts of unique harmony. Baby steps at the beginning can make giant strides in the end.

Exactly the way a musician can develop his theme and lead it to a triumphant crescendo, healing energy can be sent to conception, pregnancy and birth patterns accordingly, so that life can be supported and developed to its best to honor its existence and to bless human experience for all souls in process.

We can learn to approach the pregnant couple with no discrimination of any kind, look them in their soul eyes. We can join forces so that we can be present and hold hands with them as they heal their own pre-, peri- and after natal traumas; open up their consciousness and heart to welcome, respect, honor, recognize and appreciate the invaluable gift of new life as encountered in the prenate; looked at in the eyes of a baby at birth, seen in the acts of adults and releasing as it is present in the last breath at death.

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Investigating the Impact of the Learning Context for

Pre-service Teachers' Motivation

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This quantitative study investigated pre-service teachers' motivation in a teacher education program and was guided by the well-established framework of Self-Determination Theory (Deci & Ryan, 1985). The study examined three research questions: (1) To what degree are German pre-service teachers motivated to learn in their teacher education program?; (2) Can their motivation be predicted by their perceived learning context?; and if so, (3) Is the perceived learning context still a significant predictor after controlling for participants' extroversion? 109 pre-service teachers enrolled at a German university voluntarily participated. Data were collected by a questionnaire assessing pre-service teachers' motivation to learn in their program, their perceived learning environment, as well as their extroversion. The analyses revealed that pre-service teachers are autonomously motivated, which considerably depends on the perceived learning context. Moreover, the perceived learning context is still a significant predictor of pre-service teachers' motivation after controlling for extroversion. The findings provide some practical implications suggesting how to instruct pre-service teachers at universities.

Keywords: teacher education, self-determination theory, intrinsic motivation, basic need satisfaction, learning environment

Introduction

Currently, approximately 912,000 teachers teach at German schools (Kultusministerkonferenz, 2014). Many are senior teachers who will be retired within the next few years. Thus, a teaching career attracts many graduating students faced with the question of which occupation to choose. Accordingly, for the academic year 2010-2011 about 55,000 students were expected to enroll in a teacher program at a German university (Informationssystem Studienwahl & Arbeitsmarkt, 2013).

Surprisingly, despite myriad published research about motivation, only a few studies have addressed the question of the motivation of individuals entering the teaching field (Woolfolk Hoy, 2008). Most of those empirical studies investigated (pre-service) teachers' motivation by examining their motives or reasons for choosing the teaching profession (e.g., Watt & Richardson, 2008). In Germany, the Potsdam Teacher Survey (Schaarschmidt, 2005) examined the main reasons why German pre-service teachers chose the teaching career. This empirical study revealed that more than half of the German pre-service teachers showed motivational

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deficits such as low ambition, low engagement, and low value of (educational) work. Watt and Richardson (2008) found similar results in Australia. They identified three types of beginning teachers: "highly engaged persisters", who wanted to pursue a lifetime career of teaching; "highly engaged switchers", who planned to only teach for a span and already contemplated other careers after "outgrowing" the teacher profession; and "lower engaged desisters", who seemed to be disappointed with teaching as a career choice. Parents would like their children to be taught by teachers who are "highly engaged persisters". However, only 46% of the surveyed teachers were identified as this kind. These results also mean that more than half of the respondents were not intrinsically motivated to consider teaching a lifetime career. These findings may suggest that the decision to become a teacher is only a stopgap for those who originally wished to pursue other career options. In this context, Watt and Richardson (2008) found a significantly higher motivation for teaching as a fallback career among highly engaged switchers and lower engaged desisters compared to highly engaged persisters. On the other hand, highly engaged persisters showed significantly higher levels of intrinsic motivation for teaching compared to the other two groups of pre-service teachers. Indeed, a range of empirical studies have revealed that both pre-service and novice teachers show a strong intrinsic motivation to teach (Chong & Low, 2009; Guarino, Santibanez, & Daley, 2006; Sinclair, 2008) and that the motivation for teaching is generally stable over the first five years of actual teaching in the classroom (Richardson & Watt, 2010).

The requirements for entering a teacher career program at German universities have become stricter in the last few years. Therefore, the undesirable trends found by Schaarschmidt (2005) may have subsided by now. Given that subsequent studies on teacher motivation depict a high level of goal-orientation and certainty about career choice among German pre-service teachers and education students (e.g., Foerster, 2008; Rothland, 2010), one can assume that current German pre-service teachers are more likely to be highly engaged persisters and therefore are intrinsically motivated to study about teaching. However, to present time, little is known about pre-service teachers' motivation to learn in their program. As the teaching profession strives to attract and retain high quality teachers, it is worth delving further into aspects of teacher motivation, particularly the motivation of those enrolled in teacher education programs (Mansfield & Beltman, 2014). This present study focused on investigating pre-service teachers' motivation for learning in their program.

Not only is there a dearth of research on pre-service teachers' motivation to learn, but previous research on this topic is missing a link to psychological theories and models of motivation (Watt & Richardson, 2007). The current paper is guided by one of the most well established theoretical frameworks in the field of motivation, namely Self-Determination Theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2000a, 2000b). SDT not only describes different degrees of motivation but also distinguishes between several types of motivation, such as different reasons or goals that give rise to an action (Ryan & Deci, 2000a). Moreover, SDT presumes context to play a crucial role in the development of motivation. This paper will provide details concerning these two aspects of SDT.

Theoretical Background

Types of Motivation

In Self-Determination Theory (SDT), motivation is distinguished as intrinsic and/or extrinsic. In the educational domain intrinsic motivation to learn refers to those learning behaviors accomplished because they are considered to be interesting and enjoyable. Unfortunately, many aspects of education are not inherently interesting or enjoyable and will require extrinsic motivation (Niemiec & Ryan, 2009). Students are

extrinsically motivated to learn if they are driven by an expected outcome (external impetus) following their learning, such as receiving a reward or trying to avoid punishment (see Ryan & Deci, 2000a).

The mere distinction between intrinsic and extrinsic motivation, however, is more complex than a simple separation between the two types of motivation. As SDT posits, there are various types of extrinsic motivation involved when thinking about students who are less interested in learning a subject: some students learn with resistance and disinterest, while others do so with an inner attitude of willingness (see Ryan & Deci, 2000a). The latter case would reflect a somewhat internalized way to motivate oneself to learn. SDT presumes four distinct types of extrinsic motivation (see Figure 1) that vary with regard to the degree to which they are perceived to be autonomous (Niemiec & Ryan, 2009) or self-determined.
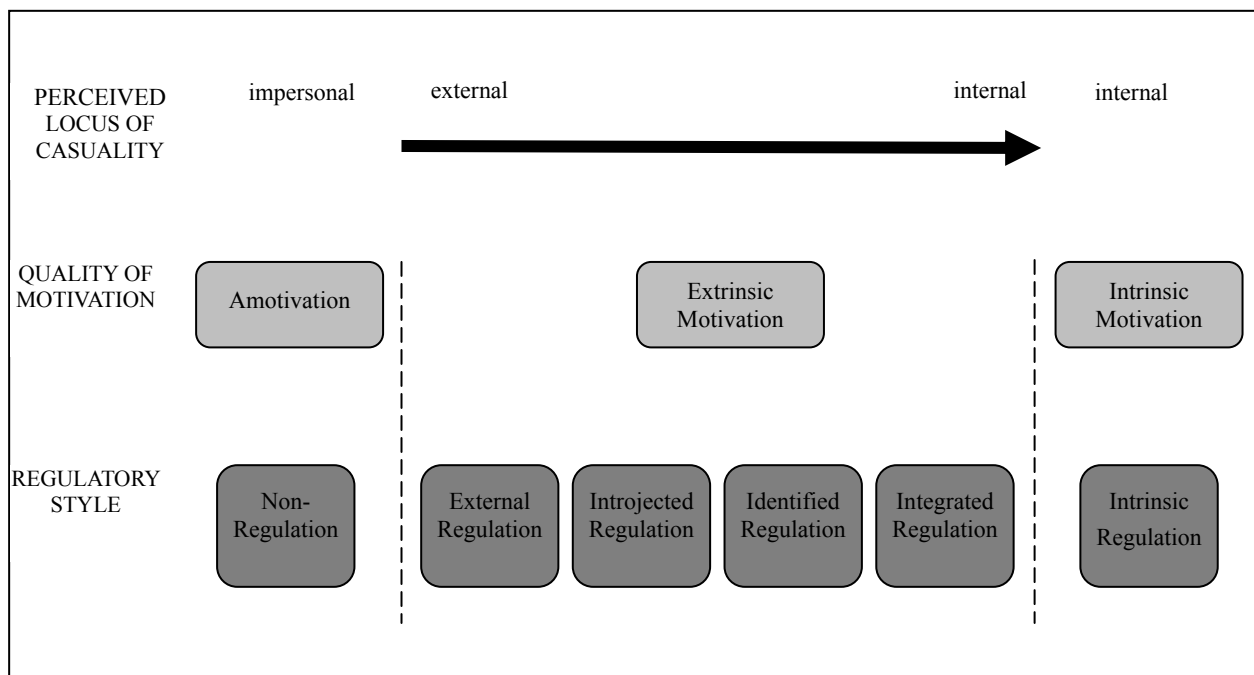
Figure 1. Types of motivation and associated regulatory styles posited by SDT (according to Ryan &Deci, 2000b).

On the far left of Figure 1, the motivational state is called "amotivation". A student is amotivated when s(h)e lacks any intention to attempt to learn. To the right of "amotivation" is "extrinsic regulation", the least autonomous type of extrinsic motivation. In this state a student attempts to learn in order to satisfy an external demand or receive an externally imposed reward. It has been shown that extrinsically regulated behaviors are hardly maintained once the external, controlling consequences have been removed (Vansteenkiste, Ryan, & Deci, 2008). The next category of extrinsic motivation is "introjected regulation". This state involves feeling pressure to avoid guilt or anxiety or to attain ego-enhancements or pride (Ryan & Deci, 2000a). In other words, the main motivation for learning is to reduce internal pressure regarding a desire to feel proud or to avoid shame. A more self-determined form of extrinsic motivation is "regulation through identification". Here, a student has identified with the personal importance of a learning activity (Ryan & Deci, 2000a). Specifically, the learning behavior is considered to be valuable or relevant for a life goal such as graduating from a university. The most autonomous category of extrinsic motivation is "integrated regulation". Actions characterized by integrated regulation are evaluated and brought into congruence with one's other values and

needs and thus are assimilated (Ryan & Deci, 2000b). Integrated regulations share many qualities with intrinsic motivation but are still extrinsic because the action is done for its supposed instrumental value and not for the behavior itself (Ryan & Deci, 2000a).

Many empirical studies in the educational context reveal that more autonomous extrinsic motivation, namely identified and integrated regulation, is associated with higher engagement (Connell & Wellborn, 1991), higher persistence (Ratelle, Guay, Vallerand, Larose, & Senécal, 2007), higher performance (Guay, Ratelle, Roy, & Litalien, 2010; Miserandino, 1996; Taylor, Jungert, Mageau, Schattke, Dedic, Rosenfield, & Koestner, 2014, study 1), higher perceived competence and interest (e.g., Black & Deci, 2000; Krapp, 2005), and lower dropout rates (Vallerand, Fortier, & Guay, 1997). Thus, these would be the most desired types of extrinsic motivation for pre-service teachers.

At the far right of the continuum is the classic state of "intrinsic motivation" as the prototype of self-determination (Taylor et al., 2014). Here a student intrinsically regulates himself/herself by enjoying the specific task. In the context of the present study, the pre-service teacher would engage in learning because s(h)e is highly interested in the (educational) content of the teacher program. No other (external) reasons would have to be provided. It would be highly desirable to only have intrinsically motivated students in the teacher program. However, there is always less interesting content that also has to be learned. Thus, pre-service teachers will not incessantly be intrinsically motivated for all of their seminars and lectures. Therefore, it is to great advantage to facilitate self-determined learning situations in order to support autonomous extrinsic as well as intrinsic learning motivation.

Basic Psychological Needs and the Role of Learning Environment

The classic theories of motivation posit that motivation is always a function of internal (person) and external variables (context). Accordingly, in SDT three basic psychological needs (internal) are assumed which have to be satisfied by the social and environmental context (external) before more autonomous versions of motivation can emerge: the need for competence, the need for autonomy, and the need for relatedness (Ryan & Niemiec, 2009).

Whenever students feel able to effectively master a class assignment, the "need for competence" is satisfied (Ratelle & Duchesne, 2014). Instructors can facilitate their students' perceived competence by optimal challenges, freedom from demeaning evaluations (Ryan & Deci, 2000a), and summative instead of formative feedback (Chan & Lam, 2010). Realizing these conditions in teacher programs at universities would support pre-service teachers to experience the feeling of competence and thereby develop higher levels of autonomous motivations.

However, the mere feeling of being competent will not enhance intrinsic motivation unless it is accompanied by a sense of autonomy (Ryan & Deci, 2000b). Learners must also experience their learning behavior as volitional and reflectively self-endorsed (Niemiec & Ryan, 2009) in order to maintain or enhance more autonomous motivation. They have to feel independent from undesired internal or external pressure (Krapp, 2005). In this context, research has shown that autonomy-supportive teaching practices are associated with positive outcomes in the classroom (e.g., Chirkov & Ryan, 2001; Jang, Reeve, Ryan, & Kim, 2009; Tsai, Kunter, Lüdtke, Trautwein, & Ryan, 2008; Sheldon & Krieger, 2007; Vansteenkiste et al., 2012). Instructors can support the "feeling of autonomy" by giving the learner choices and the opportunity for self-direction. Any kind of perceived control (e.g., threats, deadlines, competition pressure) leads to a diminishing effect on

intrinsic motivation. Thus, with regard to the quality of motivation to learn, pre-service teachers could benefit from a more autonomy-supportive instruction in their program.

Besides the perceived autonomy and competence, a third factor, namely the "need for relatedness", is crucial for intrinsic motivation. If students feel related to their teachers and experience a sense of security, an autonomous learning motivation can flourish. Low perceived relatedness leads to a decrease in autonomous motivation (den Brok, Brekelmans, & Wubbels, 2004; Maulana, Opdenakker, & Bosker, 2014; Opdenakker, Maulana, & den Brok, 2012; Wubbels & Brekelmans, 2005). Hence, pre-service teachers' learning motivation might also be enhanced by esteeming a positive learning context characterized by instructors who treat their pre-service teachers with respect and provide group projects with congenial fellow students in order to promote their perceived relatedness.

In summary, only people who experience themselves as competent, self-determined, and related to others in a supporting learning context will have the chance to develop intrinsic motivation to learn. Thus, in the teacher program at universities, pre-service teachers' intrinsic motivation requires the support of their needs for competence, autonomy, and relatedness, which can be provided by the social agents of the learning context (instructors).

Research Questions

In order to investigate German pre-service teachers' motivation and its conditions in the teacher education program three research questions were posed.

Research Question 1 (RQ1): Which types of motivation for learning predominate among pre-service teachers?

So far, most research studies completed in the field of education addressed the motivation of middle and high school students or university students of programs other than education. RQ 1 addresses the extent of the different types of motivation German pre-service teachers experience in their program.

Research Question 2 (RQ2): Does the perceived learning context account for the variability in pre-service teachers' intrinsic motivation to learn?

The mere examination of the degree and quality of pre-service teachers' motivation does not answer the more important questions for practice: which factors would be decisive for the development of motivation and how might pre-service teachers' motivation be facilitated? There is some evidence that the quality of the perceived learning environment positively influences the occupational commitment of pre-service teachers (e.g., Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hofman, 2012). Many empirical studies in the educational context have already highlighted the core role of the perceived learning environment for the development of intrinsic motivation as assumed by SDT (see Niemiec & Ryan, 2009). However, there exists no research so far that examines whether these principles can be generalized to respondents enrolled in a teacher program. If the assumptions of SDT are also true for this target group, it follows that pre-service teachers' intrinsic motivation depends on their perceived learning environment. Thus, the second research question of the present study addresses the relevance of the basic psychological need satisfaction by the social learning context.

Research Question 3 (RQ3): Does the learning environment significantly predict pre-service teachers' intrinsic motivation even after controlling for their extroversion?

Other evidence demonstrates that intrinsically motivated behavior is associated with the personality of a person. Particularly for the university context the study of Komarraju, Karau, and Schmeck (2009) revealed the

decisive role of the Big Five personality traits (neuroticism, extraversion, openness, agreeableness, and conscientiousness) in predicting college students' academic motivation and achievement. Also, the results of Clark and Schroth (2010) indicated that those who were intrinsically motivated to attend college tended to be extroverted, agreeable, conscientious, and open to new experiences. It can be assumed that this is also true for students enrolled in a teacher program.

In line with Decker and Rimm-Kaufman (2008), it is critically important to examine what personal attributes (e.g., personality) pre-service teachers have, as these may relate to their beliefs, their own learning (see Clark & Schroth, 2010; Komarraju, Karau, & Schmeck, 2009) and thus the way they teach their future students. In this context the question can be raised: Which is the decisive personality trait for a successful teacher? Research shows that teachers are required two essential qualities: first, being very sociable and, second, showing leadership qualities (see Goodstein & Lanyon, 1999; Rockoff, Jacob, Kane, & Staiger, 2008). Both attributes are combined in the personality trait extroversion. Empirical studies have not only revealed a significant correlation of extroversion with intrinsic motivation (e.g., Clark & Schroth, 2010) but also indicated a significant relationship between students' reports of cognitive learning and teachers' self-reported extroversion. In contrast, teachers' neuroticism did not show significant correlations (e.g., Valencic, 2001). In a study by Khodadady and Mirjalili (2013), teachers' extroversion showed the highest correlation of all personality traits with student achievement. As these findings demonstrated the relevance of extroversion for the degree of interest and willingness in learning and teaching, the third research question focuses on the mediating role of pre-service teachers' extroversion.

Methodology

Research Design

The data were collected using a cross-sectional design during regular university class sessions. The participants were recruited by the researcher (first author) in five different seminars. Over 90% of the students agreed to voluntarily participate in the study. The respondents did not receive any benefits for participation.

Participants

Data were collected from 109 German students who were enrolled in the teacher program at a German university (mean age 23.1 years). 81% of the respondents were female. 7.3% were indicated to have no German citizenship. The participants graduated high school with a mean grade of 2.34 in the German grading system (equivalent with a B- in the U.S. grading system). They had already studied in the program for an average of 3.68 semesters ($SD = 1.96$).

The German education system is unique, as it tracks school-aged students depending on their academic performance. For the first four years (primary school), all students are taught together in one class (no tracking). With the beginning of middle school (grade 5), primary school teachers assign their students to one of three school tracks depending on their school performance: low-achievers are assigned to the lowest track (Hauptschule), average achievers to the middle track (Realschule), and high-achievers to the highest track (Gymnasium). Additionally, there exist schools of special education.

Of all participants, 29.4% were enrolled in the primary teacher education program, 21.1% studied in an education program for the lower tracks (Hauptschule and Realschule), and 27.5% for the higher track (Gymnasium). The remaining students (22.0%) were enrolled in the teacher program for special education.

Before starting the teacher education program, 16.5% of all participants had finished a vocational training and 30.3% had begun to study in a different program, which only 3.7% graduated from.

Instruments

All participants completed a questionnaire, which assessed pre-service teachers' motivation to learn for their program as well as their perceived learning environment at the university. The questionnaire consisted of a translated version of the Self-Regulation Questionnaire in Academic Settings (SRQ-A; Ryan & Connell, 1989) and assessed extrinsic motivation (9 items, $\alpha = 0.72$), introjected motivation (9 items, $\alpha = 0.74$), identified motivation (7 items, $\alpha = 0.76$), and intrinsic motivation (7 items, $\alpha = 0.82$). Due to the overlaps with intrinsic motivation, the SRQ-A does not assess integrated motivation separately. As the SRQ-A originally addresses learning in school as opposed to a program, the wording was adapted to the university context (e.g., "Why do I try to do well in school?" was changed to "Why do I try to do well in my program?").

The administered questionnaire also assessed students' perceived basic psychological need satisfaction (BPNS) by the learning environment (12 item, $\alpha = 0.82$). These items were based on the Learning Climate Questionnaire (LCQ) (see also Black & Deci, 2000) and were also translated into German. As the original items of the LCQ can be used for the university context, no adaptations in wording needed to be done. All translations of both original English questionnaires were done by a German researcher. Afterwards they were checked and corrected by a qualified bilingual interpreter. As an additional variable of the learning context, the overall satisfaction with the instruction was assessed by a German scale from Schwarzer and Jerusalem (1999; 3 items, $\alpha = 0.76$; e.g., "The contents of the classes are usually interesting for us.").

In order to control for the core personality trait of interest in the present study, the scale extroversion (12 items, $\alpha = 0.79$) from the German personality test NEO-FFI (Borkenau & Ostendorf, 2008) was administered to the participants.

All items of the administered questionnaire could be answered on a five-point Likert scale (0 = "I do not agree at all"; 1 = "I do not agree"; 2 = "I moderately agree"; 3 = "I agree"; 4 = "I totally agree").

Results

The collected data were analyzed by the statistical program SPSS 22.0. In case of any missing data those were listwise deleted.

RQ1: Pre-Service Teachers' Quality and Degree of Motivation

The first research question addressed the degree of different types of motivation to learn in the teacher education program. Figure 2 depicts the extent of the different motivational types of all participants. The respondents reported a relative high degree of autonomous motivation, namely intrinsic and identified regulation, whereas the degree of introjected and extrinsic regulation is lower. *T*-tests for paired samples showed that all four types of motivation significantly differed from one another ($T_{\text{intrinsic vs. identified}} = -12.17$, $p < 0.001$; $T_{\text{intrinsic vs. introjected}} = 5.48$, $p < 0.001$; $T_{\text{intrinsic vs. extrinsic}} = 11.14$, $p < 0.001$; $T_{\text{identified vs. introjected}} = 15.63$, $p < 0.001$; $T_{\text{identified vs. extrinsic}} = 18.89$, $p < 0.001$; $T_{\text{introjectd vs. extrinsic}} = 9.45$, $p < 0.001$). These results indicate that the respondents perceive a relative high level of self-determination while studying in their program.

RQ2: Learning Environment as Predictor of Pre-Service Teachers' Motivation

At initial analysis, the intercorrelation between both assumed relevant environmental factors was checked: the correlation analysis revealed a medium but highly significant association ($r = 0.34$; $p < 0.001$) between

respondents' perceived basic needs satisfaction and overall satisfaction with the instruction. Despite this significant correlation, both of the predictors only share about 11% common variance. Thus, they were both considered as complementing contextual factors and included separately into the subsequent Multiple Regression Analyses.

As expected, the first Multiple Regression Analysis showed that both predictors of the learning environment accounted for 32% of the variance in the criterion: perceived basic need satisfaction (*Beta* = 0.208, *T* = 2.43; *p* < 0.05) as well as students' overall satisfaction with the instruction (*Beta* = 0.462, *T* = 5.38; *p* < 0.001) significantly predicted students' intrinsic motivation to learn for their program. Thus, pre-service teachers develop a higher intrinsic motivation the more they perceive a satisfaction of their basic psychological needs for autonomy, competence, and relatedness, and the more satisfied they are with the instructional design of the classes in their program.
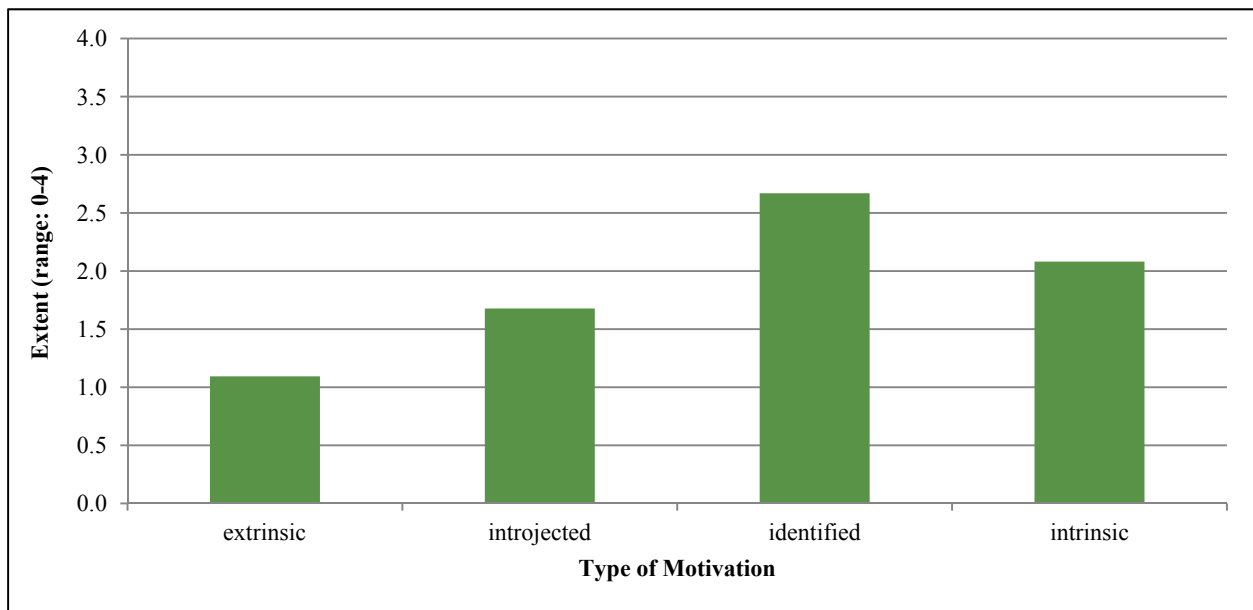
Figure 2. Mean extent of different types of motivation.

RQ3: Potential Mediation by Extraversion

In a second step, we examined whether results of the former Multiple Regression Analysis could be confirmed even after controlling for extroversion as core variable of a teacher's personality. A Blockwise Multiple Regression Analysis was conducted with the NEO-FFI scale extroversion (personality) in the first block and both of the learning environment scales in the second block. The findings are shown in Table 1. The results of the analysis revealed that the first model (extroversion) marginally predicts pre-service teachers' intrinsic motivation (*p* = 0.08), accounting for only 3% of the variance in the dependent variable. This pure result would suggest if a pre-service teacher shows a high level of extroversion (s)he also tends to be intrinsically motivated for learning in the teacher program. However, adding the predictors of the learning environment (model 2) leads to a reduction of this marginal influence of extroversion (*Beta* = 0.069; *T* = 0.83; *p* = 0.41). In contrast, the results of model 2 again reveal a highly significant prediction (R^2 = 34%) of respondents' intrinsic motivation by their perceived learning context. Thus, perceived basic psychological need satisfaction and respondents' overall satisfaction with the instruction could significantly account for pre-service

teachers' intrinsic motivation and added 31% of explained variance to the prediction. This value is nearly as high as considering only the learning environment without the personality trait (RQ2).

Table 1

Blockwise Regression Analyses to Predict Intrinsic Motivation

Model	Predictor	Beta	T	p	R	R²	ΔR²	ΔF(df)	Δp
Model 1	Extroversion (NEO-FFI)	0.172	1.75	0.08	0.17	0.03	0.03	3.06 (1, 100)	0.08
Model 2	Extroversion (NEO-FFI)	0.069	0.83	0.41	0.59	0.34	0.31	23.27 (2, 98)	0.00
	Basic need satisfaction	0.229	2.63	0.01					
	Overall satisfaction with instruction	0.449	5.11	0.00					

Discussion and Limitations

The basic research questions in this present study examined motivation of German pre-service teachers. In particular, the study examined two aspects: (a) the extent of pre-service teachers' motivation to learn in the teacher education program; and (b) whether or not intrinsic motivation can be predicted by the perceived learning environment at the university. Responding to Watt and Richardson's (2007) assertion that research on teacher motivation is missing a link to psychological theories and models, this study is based on the well-established Self-Determination Theory (Deci & Ryan, 1985) as a vehicle to explore pre-service teachers' motivation and the influencing contextual factors.

RQ1: Pre-Service Teachers' Quality and Degree of Motivation

Descriptive analyses revealed that respondents who are enrolled in a German teacher education program are autonomously motivated for their learning: on average, the degree of students' intrinsic and identified regulation was significantly higher than the degree of students' introjected and extrinsic regulation. These findings are consistent with recent empirical studies on teacher motivation (e.g., Pohlmann & Möller, 2010; Watt & Richardson, 2007) which found that pre-service teachers reported higher intrinsic than extrinsic motivation with regard to their field of study. However, as this study assessed data of pre-service teachers who were already enrolled in the teacher program for an average of almost two years, there might have been a self-selection in the first semesters, which would not be accounted for. Those pre-service teachers who were not autonomously motivated might have already dropped out of the program. Therefore, the present study may have only included pre-service teachers who were still enrolled (and answered the questionnaire) and were more interested in teaching. However, a recent report of Heublein, Richter, Schmelzer, and Sommer (2012) indicated a quite low dropout rate (about 6%) of students enrolled in a German teacher education program. Therefore, the present findings can be assumed to be quite reliable. Despite this low dropout rate, future studies should focus on student teachers at their entrance into the program in order to control for any kind of self-selection. These students could be re-assessed regularly with a longitudinal design in order to examine the development of their motivation and performance (e.g., Malmberg, 2008; Watt & Richardson, 2008).

The influence of self-selection is even more relevant when looking at the findings of the studies of Watt and Richardson (2008), who revealed that about half of the pre-service teachers were less motivated to teach as their lifetime career. These findings allow further discussions and implications for researchers and practitioners. First, such findings call for more effort in developing and testing reliable as well as valid instruments which enable assessment of professional suitability and abilities of pre-service teacher students (Rauin, 2008) in order to prevent high dropout rates during the program or during the professional careers. Such instruments could

assess various types of motivation as realized in the present study. It might also be instructive to include different personality traits (e.g., conscientiousness) as well as other relevant factors with regard to teachers' professionalism, such as domain-specific knowledge, teachers' beliefs, and their self-regulatory competence (see also Kunter et al., 2007). In Germany, such assessment tools currently do not exist and thus more research must be done with regard to this topic.

RQ2: Learning Environment as Predictor of Pre-Service Teachers' Motivation

The second research question of this study hypothesized that the perceived learning environment would play a core role in pre-service teachers' intrinsic motivation. As expected, the findings confirmed the assumption of SDT concerning the high relevance of the contextual factors for intrinsic motivation of pre-service teachers: Not only was students' perceived basic psychological need satisfaction a significant predictor, but also their overall satisfaction with the instruction. These two factors accounted for 32% of pre-service teachers' intrinsic motivation to learn. Typically, only the three basic psychological needs are assessed as predictors for motivation. Therefore, it might be beneficial to pay close attention to the overall satisfaction scale. Why is this scale such a strong predictor for intrinsic motivation? One potential reason might be that the respondents "sum up" all of their experiences and perceptions with the instruction when answering the questions about their overall satisfaction. This might be an additional but less differentiating indicator for basic psychological need satisfaction. The above mentioned significant correlation also supports this. However, in order to investigate this assumption more precisely a longitudinal design should be employed in future studies.

With regard to the core role of the learning context for intrinsic motivation, it might also be useful to better understand the experiences and aspirations of pre-service teachers who report low motivation. It might be possible to enhance their interest by improving the nature of their education. According to Self-Determination Theory (Deci & Ryan, 1985, 2000; see also Niemiec & Ryan, 2009) these less motivated teacher students might, for instance, benefit by more formative rather than summative feedback (see Chan & Lam, 2010) from their instructors, more choices in the tasks they are supposed to complete or the contents they are supposed to learn, less competitive learning situations, group projects, and an atmosphere characterized by friendliness and less hierarchical structures. The effects of such changes in the learning context might be examined by an intervention study particularly addressing pre-service teachers at risk to drop out of the teacher education program.

RQ3: Potential Mediation by Extraversion

Concerning the third research question, the Blockwise Multiple Regression Analysis revealed that the internal personality factor, namely pre-service teachers' extroversion, only had a marginal impact on respondents' intrinsic motivation. These findings may support the aforementioned research of Clark and Schroth (2010) revealing that extroversion shows a positive association with intrinsic motivation. However, when adding the context variables in the Blockwise Regression Analysis (model 2) the marginal impact of extroversion diminished, indicating a rather minor role of this personality trait for pre-service teachers' motivation.

Unfortunately, in the present study only one personality trait was assessed, which was hypothesized to potentially be essential for pre-service teachers' motivation to learn in their program. In future studies it might be beneficial to consider the other four of the Big Five personality traits: conscientiousness, neuroticism,

openness, and agreeableness (see McCrae & Costa, 2004) and examine which impact those factors have for pre-service teachers' motivation when simultaneously considering the context variables.

Limitations

One basic limitation of the present study is associated with the rather small sample of respondents that voluntarily took part in our measurements and thus were not randomized. Moreover, the data were collected from a quite heterogeneous sample, which differed not only in teacher programs (e.g., primary and secondary school teacher programs), but also in the chosen subjects and the semesters they had already studied. Thus, the present findings are constricted and may not necessarily be generalizable. Particularly with respect to the first research question about the degree of different types of motivation experienced with learning for the program, the present analyses can only provide a preliminary indication of the answer. Answering this research question with such a small sample size would usually demand comparative data from, for example, other study programs, other countries, or experienced teachers. Therefore, in future studies, similar data should either be collected with a larger sample size or with a comparative sample.

Methodologically, it must be acknowledged that the chosen research design, a cross-sectional approach, holds some limitations. In future studies, a longitudinal design should be utilized in order to explore how the perceived learning context and students' individual factors (e.g., personality) influence the "development" of intrinsic motivation and internalization. It would be interesting to examine whether the same predictive patterns exist during a longer trial period. After identifying the core contextual predictors, these could be investigated by an intervention study to show in which way an optimized learning environment affects the degree and development of autonomous motivation in students of a teacher program at universities. Moreover, it might be beneficial for future studies to consider multiple measures of performance, such as grades, attained credit points per semester, time needed to finish the program, or other related motivational aspects such as the degree of commitment and the tendency to drop out. From this, the influence of the educational context on students' performance as well as the potential mediation by students' motivation could be further investigated.

Conclusions and Practical Implications

The findings of the present study underline the relevance of SDT (Deci & Ryan, 1985) for the educational context of university teacher programs and also point to possibilities of how practitioners can face the challenging task of fostering more versus less intrinsic motivation in their students. Supporting intrinsic motivation is supposed to be one of the grand aims in education—a "natural wellspring of learning and achievement" (Ryan & Deci, 2000a, p. 55), because the underlying intrinsic motivational tendencies of pre-service teachers can be seen to be a resource that could be harnessed by educators as they guide learning and development (Niemiec & Ryan, 2009; Samuelowicz & Bain, 2001). However, many of the educational activities prescribed at universities in teacher programs are not designed to be intrinsically interesting (see also Ryan & Deci, 2000a). Thus, it is of great interest to know how instructors in teacher programs can foster the process of internalization and integration. The more learners' basic psychological needs are satisfied, the higher the chances that students will become more autonomously engaged in their studies (Niemiec & Ryan, 2009). Therefore, in this final section we would like to provide some general recommendations referring to how to meet pre-service teachers' basic psychological needs with teacher programs at universities.

How to Enhance Pre-Service Teachers Perceived Autonomy

With regard to the enhancement of perceived autonomy, instructors may minimize any control and pressure (e.g., evaluative procedures, high competition, threats, deadlines) while maximizing students' participation in decisions with regard to academic activities (e.g., topics, learning material, presentation) in order to enhance their students' intrinsic motivation and outcomes (see also Chirkov & Ryan, 2001). This might also be accomplished by designing seminars with alternative teaching methods that enable students to become active learners rather than passive participants. In particular, emphasizing the meaningful rationale for why a specific learning activity is useful might also support pre-service teachers' perceived autonomy (e.g., Deci, Eghrari, Patrick, & Leone, 1994; Reeve, Jang, Hardre, & Omura, 2002). With regard to (less activating) lectures, this seems to be an appropriate way to support students' internalization.

How to Facilitate Pre-Service Teachers' Perceived Competence

Aiming at the facilitation of perceived competence, instructors at universities could also provide tasks for the students that optimally fit their abilities but still allow them to expand their competencies (see Niemiec & Ryan, 2009). Even though in many countries regular evaluations and assessments of students are formally prescribed to be conducted, these summative evaluations should always be combined with formative and effectiveness—promoting feedback to provide information on how to master a specific task (Ryan & Deci, 2000a).

How to Foster Pre-Service Teachers' Perceived Relatedness

With regard to fostering students' perceived relatedness in classrooms, it is suggested that internalization is more likely when students feel accepted and respected by not only their instructors but also by their peers. Thus, instructors in teacher programs should always treat their students with respect and as equal partners in the learning context. Implementing learning tasks in the classroom which require collaboration among students might also enhance students' feeling of being related. This idea has been supported by a growing number of studies showing that collaboration among classmates not only fosters students' motivation but also their performance, as they have to take greater responsibly for the learning outcome (e.g., Ginsburg-Block, Rohrbeck, & Fantuzzo, 2006; Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003).

Potential Long Term Effects

Overall, as teachers' motivation has been shown to be associated with students' motivation, learning behavior, and perceptions of instructional practices (see e.g., Assor, Kaplan, Kanat-Maymon, & Roth, 2005; Butler & Shibaz, 2008) teachers' motivation should definitely be put more into the centre of attention of research. Many empirical studies have revealed that if teachers themselves experience pressure in their professional context they tend to use more controlling instructional strategies (Pelletier, Séguin-Lévesque, & Legault, 2002), which in turn have an impact on students' motivation and engagement (Roth, Assor, Kanat-Maymon, & Kaplan, 2007). If pre-service teachers themselves learn in a context featuring high autonomy-support, competence-support, and relatedness, these experiences may have a positive influence on their future students' motivation and learning. Accordingly, teacher programs should be designed to satisfy pre-service teachers' needs of autonomy, competence, and relatedness in order to support the development of their intrinsic motivation as well as their willingness to engage in less interesting tasks (Niemiec & Ryan, 2009). This will enable them to become autonomy-supportive teachers in the future.

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Creative Movement as an Approach to Learning Science in the Preschool Period

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Moving and sensory consciousness are the main ways children learn about their world and themselves. Learning is facilitated when a child's entire body is involved (Boyd, Chalk, & Law, 2003; Chandler & Tricot, 2015; Davies, 2003; Gallahue, Werner, & Luedke, 1975; Gilbert, 2004; Joyce, 1994). The outdoor environment is an ideal place for children to play and learn, since it offers an incredible wealth of sensory experiences (Wilson, 2008). In our project, preschool children (aged 4-5) were offered a direct early science experience and the chance to express it through creative movement. We selected a few science topics (spiders, beetles, a toad, a caterpillar, grasses, trees, rotating maple, linden and ash tree fruits, rain and wind) and conceived outdoor activities that included: an experience and the act of experiencing, learning from the experience and re-living the experience through creative movement. We video recorded the activities. When analyzing the recordings, we focused on evaluating the elements of creative movement (the use of different body parts, space, direction, levels, ranges, pathways, speed, force, and rhythm). We focused our attention on the children's genuine and credible movement responses and on stereotypical movements. Before each activity, we asked the children to depict a certain science topic by movement, which was based on their own previous ideas and knowledge about the topic. We used those results in the comparison with the movements after the direct experiences. Our results show that nature and direct contact with living beings motivated children to discover new ways of movement and new kinaesthetic senses, develop body orientation and learn the meaning of movement expressions. Through direct contact with nature and expression through movement we achieved increased focus in the child's on an animal, plant, or natural phenomenon. Children used body language to express their experience, emotions, thoughts, and attitude toward topics dealt with, and thus reinforced the early science knowledge they had gained. The children's movements were original, non-stereotypical, and we noticed significant progress in their use of creative movement elements. Group activities promoted children's social development and positive emotions toward nature. An early science experience changed the child's way of observing nature. So the child, and later the adult, can become more sensitive to nature and more responsible in his/her actions.

Keywords: creative movement, early science, outdoor learning, preschool children, experiential learning

Introduction

Creative movement stimulates cognitive learning. Moving and sensory consciousness are the main ways

children learn about their world and themselves. Learning is facilitated when a child's entire body is involved (Boyd et al., 2003). Intellectual, physical and emotional growth is stimulated through movement experiences (Chandler & Tricot, 2015; Davies, 2003; Gallahue et al., 1975; Gilbert, 2004; Joyce, 1994). Experiences in movement exploration allow the children to express themselves in non-verbal terms. This can be very important for the inarticulate child (Gilbert, 2002).

Young children are fascinated by the natural world. They know and experience the natural world differently to adults (White, 2008; Wilson, 2008). According to Rachel Carson (1956), the child knows the world as being "fresh and new and beautiful, full of wonder and excitement". As for adults, Carson says: "It is our misfortune that for most of us that clear-eyed vision that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood".

The natural environment is an ideal place for children to engage in creative play. It offers an incredible wealth of sensory experiences and open-ended materials (materials that can be used in a wide variety of ways) for motoric manipulation. Experiences in natural outdoor playspaces promote the holistic development of children as they foster growth in all of the developmental domains, including adaptive, cognitive, aesthetic, communication, sensorimotor and socioemotional. Another advantage of play in a natural environment is the lessening of aggressive behaviours (Wilson, 1995). The quality of play also tends to be richer in natural environments, where children engage in more creative forms of play (including fantasy and pretend play) than in playgrounds or "prepared" indoor playspaces (Wilson, 2008).

Creative play in natural environments also fosters the development of an environmental ethics, which must start at the early childhood level, as this is the period of life when basic attitudes and values are established (Wilson, 1994). The most effective way to instill a lifelong sense of caring and responsibility for the natural world is to give young children frequent positive experiences with the world of nature. Unless children have frequent positive interactions with the natural world, they are likely to develop unfounded fears and prejudices about nature that impede the development of an environmental ethic (Wilson, 2008).

Knowledgeable and enthusiastic adults are crucial to unlocking the potential of outdoors (White, 2008).

Preschoolers learn about nature primarily through experience and creative play (Wilson, 2008). Their experience of nature and natural phenomena facilitates spontaneous learning that ultimately leads to permanent, useful knowledge and an accomplished attitude toward all living beings. The kindergarten teacher's single most important role during this period is to facilitate children's early science experiences, and to use his knowledge to "feed" the children's curiosity arising out of such experiences. At the preschool level, the interdisciplinary approach to curricular areas is a prerequisite, and there are no limitations to the way the teacher intertwines different topics. Children can re-live their early science experiences in various ways, thus verbally, by drawing or painting, through music or through creative movement.

Methods

Our project combined science and creative movement. We conducted a single-group experiment having one treatment. The activities were conducted with a group of 15 preschool children aged 4-5. There were 6 boys and 9 girls.

We selected a few science topics and conceived activities that included:

(1) an experience and the act of experiencing;

(2) learning from the experience; and

(3) re-living experience through creative movement.

We video recorded the activities. When analyzing the recordings, we focused our attention on the children's genuine and credible movement responses and on stereotypical movements.

We evaluated the elements of creative movement (the use of different body parts, body movement, steps, level, direction, range, space, pathways, rhythm and force) using a 3-score scale (Table 1).

Table 1

A 3-Score Scale for Evaluation of the Elements of Creative Movement

Element of creative movement	Value	Score
Body parts	only legs or only arms	1
	almost entire body	2
	entire body	3
Body movement	one kind	1
	two kind	2
	more kinds	3
Steps	one kind	1
	two kinds	2
	three kinds	3
Level	one	1
	two	2
	more	3
Direction	one	1
	two	2
	more	3
Range	one	1
	two	2
	more	3
Space	one	1
	two	2
	more	3
Pathway	one kind	1
	two kinds	2
	more kinds	3
Rhythm	one	1
	two	2
	more	3
Force	one kind	1
	two kinds	2
	three kinds	3

Before each activity, we asked the children to depict a certain science topic by movement, which was based on their own previous ideas and knowledge about the topic. We used those results in the comparison with the movements after the direct experiences.

Using the statistical analysis software IBM SPSS Statistics, we computed means and standard deviations for numbers of elements of creative movement before and after the activities.

We examined the differences in the numbers of elements of creative movement by applying the related one-tailed *t*-test and effect size. We also examined the differences in means for the boys and girls by applying

the two-tailed *t*-test for independent data and effect size (Coolican, 2014).

Animals

Children in the kindergarten tend to mimic animals (fly like birds, hop like rabbits, lumber like bears, etc). The majority of these movements are stereotypical and have little resemblance to the actual animals' movements. Children often make artificial moves, blindly mimicking their peers or teacher. Up to the age of three, stereotypes are acceptable. However, many children hold on to stereotypical movement even in later stages of development.

Our activities focused on the children's immediate experience with live animals.

The children got to know and experienced: a caterpillar, a toad, a slow worm, spiders and bugs.

The children even bred some animals in their playroom, so that they were in contact with them for a longer period and got to know them better.

We created situations in which the animal moved, and encouraged the children to watch it closely. We observed how the animal: walked, ran, hopped, crawled, swam, how it moved when it ate, how it moved when it was frightened, etc.

We paid special attention to children who showed fear or any other negative emotion when in contact with an animal. With a great deal of sensitivity we applied the so-called model for the elimination of prejudice toward animals and remedied this.

Immediately after their experience with an animal, all children were motivated to re-live their new knowledge through movement. If their moves were stereotypical, we encouraged them to recall the experience. If they felt the need to get in touch with the animal again, the children could do so at this stage too.

Plants

Many preschoolers think plants do not move at all. For this reason, they often satisfy themselves that plants are not alive (Zozga & Papamichael, 2000). It is true that plant movements are far less conspicuous then the movements of animals, but we can nevertheless create conditions to help children sense them and re-live them through their own motion.

The children can experience both active plant movements (for example by watching beans sprout) as well as passive plant movements (the rotating of maple, linden and ash tree fruits or movements of grass).

Example activities

Toad

The kindergarten teacher found a toad in the kindergarten playground. It was an excellent object to include in the project.

The children got to know the toad. They opened their palms and if they wanted to hold it, we placed the animal into their hands. They had sufficient time for their first contact with the animal. At this initial stage, we used almost no verbal communication, since the powerful emotion of the children's experience made it redundant.

Gradually the children began asking questions about the toad. They were motivated to learn something new.

They wanted to know how far it can leap. We put the animal on the ground and it went on a slow crawl. As it moved, it stretched its hind legs, leaving them far behind.

When stroking it, the children realized the toad's skin is soft and warty.

They looked at its nostrils, noticing the constant lifting and lowering of its mouth floor.

We showed them how its eye contracts into the skull if we touch it. When the eye reappeared, the children noticed the nictitating membrane—the clear inner eyelid that covers their eyes when underwater. The children called it "the toad's swimming glasses".

Some children were curious about what the toad ate. To answer them, we produced an insect larva. When the toad sensed it, it turned its gaze toward it. Its body turned rigid, its head protruding far ahead of its front legs and its moves jerky. Its tongue extruded in one rapid move and brought the larva back into its mouth. Immediately afterwards its eyeballs went down into its head and it devoured the larva. The children wanted to see this again, so we placed the larva into their open palms and had the toad eat from their hands. For an instant, they could sense the feel of its soft, moist tongue on their palms.

We then put the animal into a puddle. The toad took to swimming and the children saw that with each stroke the animal stretched its hind legs in the same way they do when they swim froggy style.

Even as they were still experiencing the animal, some children began to spontaneously re-live the experience. We encouraged others to follow suit.

The children used all parts of their bodies to imitate the toad, moved inside the lower and mid levels, changing the speed of their movements, muscle tension, gaze direction—and thus put on display for us to watch a myriad of creative movement elements.

We set up an aqua-terrarium in the playroom and had the children take care of the toad. The fear that some children had felt upon their first contact with the animal had disappeared.

Rotating Maple and Lime Tree Fruits

The children were taken outside to observe and play with the fruits of the maple and lime trees.

The fruits of these trees have wings on them, making them act like little helicopters.

The children played with the seeds, making observations about how they twirled about their axes and spun in various directions.

They collected the fruits and took them back to the kindergarten, where they continued to experiment with them.

They tried dropping them from various heights and various quantities.

The children also extended their observations into physical movement. They pretended to be fruits, twirling around in various combinations, changing speed, directions and levels.

The children also planted some seeds. They observed germination process and made the connection between fruits and trees. Also this experience was re-lived through movement.

Results

Toad

The mean numbers for all elements of creative movement after the activities are higher than the mean numbers before the activities. These increases are highly statistically significant ($p < 0.050$). The mean differences (effect sizes) are very large, too ($\eta^2 > 0.140$).

The differences between means for boys and girls are not significant ($p > 0.050$), effect sizes are very small ($\eta^2 < 0.010$).
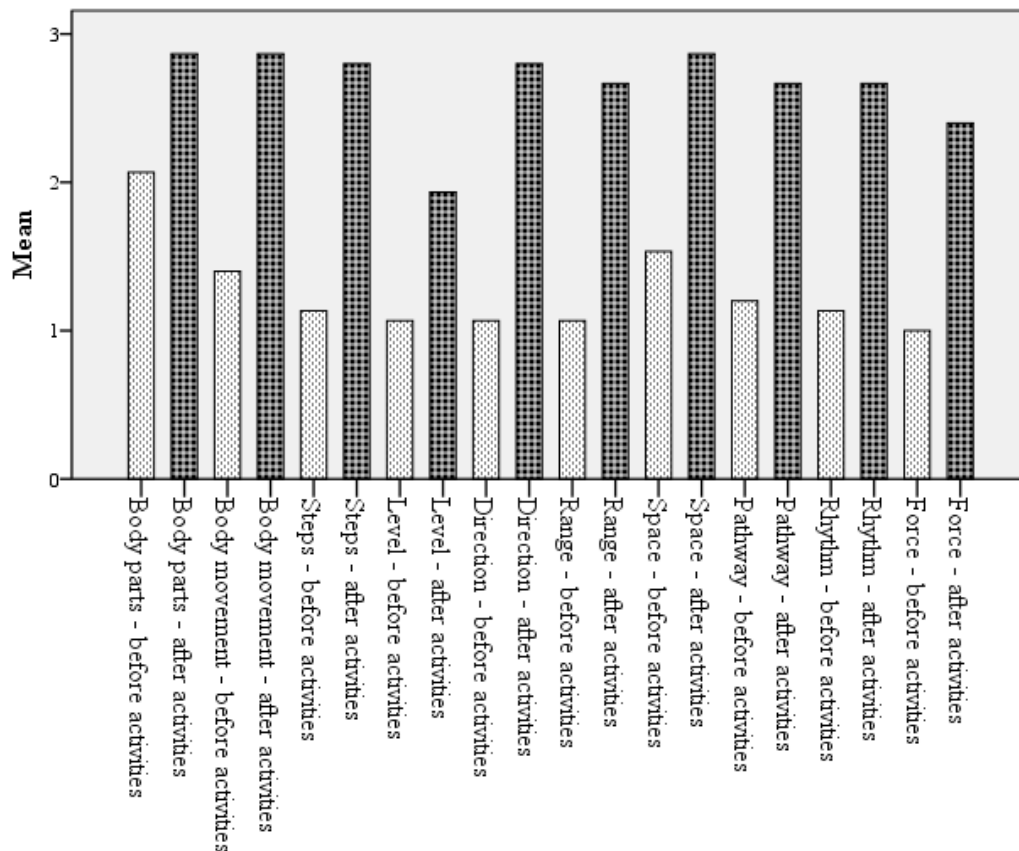
Figure 1. Means for elements of creative movement before and after activities—a toad.

Table 2

T-test and Effect Size for Elements of Creative Movement—A Toad

The element of creative movement	t	df	p (one-tailed)	Effect size η^2
Body parts	-5.527	14	0.000	0.686
Body movement	-11.000	14	0.000	0.896
Steps	-13.229	14	0.000	0.926
Level	-9.539	14	0.000	0.867
Direction	-14.666	14	0.000	0.939
Range	-12.220	14	0.000	0.914
Space	-8.367	14	0.000	0.833
Pathway	-11.000	14	0.000	0.896
Rhythm	-11.500	14	0.000	0.904
Force	-10.693	14	0.000	0.891

Grass

Also here we can see statistically significant improvement in the use of most of creative movement elements.

The mean numbers for body parts, body movement, level, direction, range, rhythm, and force as elements of creative movement after activities are higher than the mean numbers before activities. These increases are highly statistically significant ($p < 0.050$). The mean differences (effect sizes) are very large, too ($\eta^2 > 0.140$).
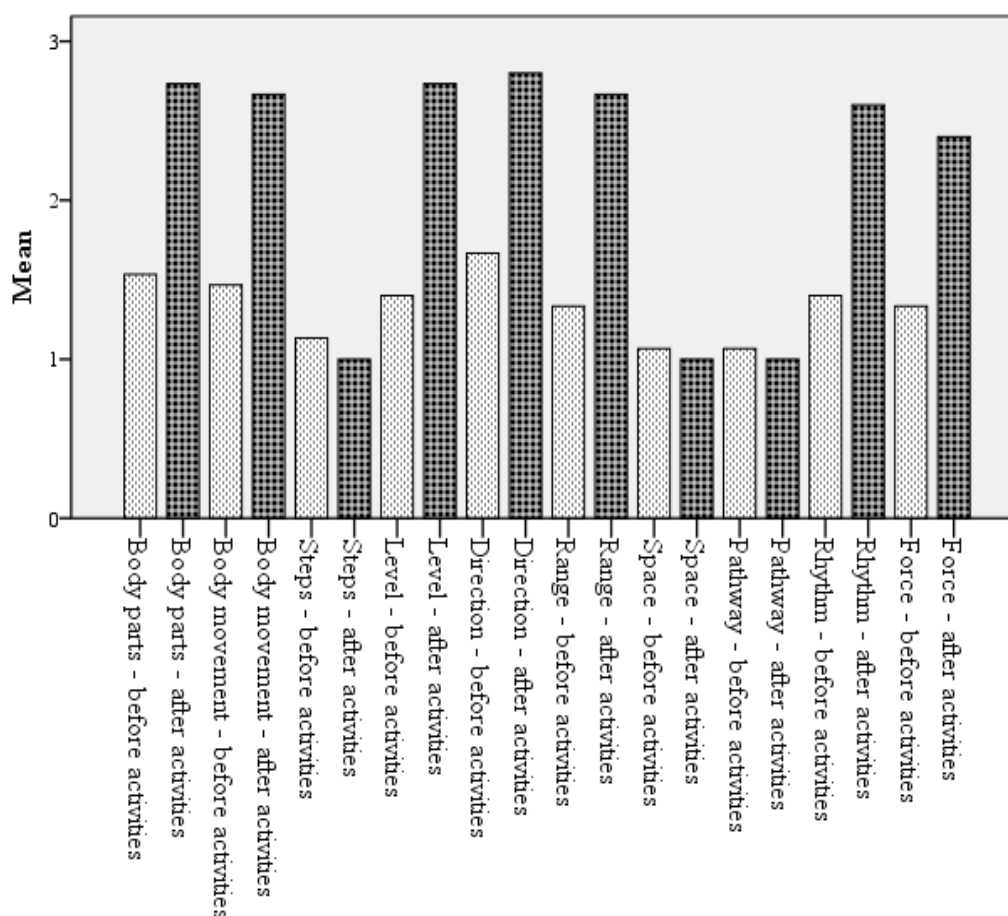
Figure 2. Means for elements of creative movement before and after activities—grass.

Table 3

T-test and Effect Size for Elements of Creative Movement—Grasses

The element of creative movement	t	df	p (one-tailed)	Effect size η^2
Body parts	-6.874	14	0.000	0.771
Body movement	-8.290	14	0.000	0.831
Steps	1.468	14	0.082	0.133
Level	-8.367	14	0.000	0.833
Direction	-5.906	14	0.000	0.714
Range	-10.583	14	0.000	0.889
Space	1.000	14	0.167	0.067
Pathway	1.000	14	0.167	0.067
Rhythm	-6.000	14	0.000	0.720
Force	-5.172	14	0.000	0.656

The mean numbers for steps, space, and pathway as elements of creative movement after activities are lower than the mean numbers before activities. The differences between means are not significant ($p > 0.050$), and the mean differences (effect sizes) are small to moderate ($\eta^2 > 0.060$).

The differences between means for boys and girls are not significant ($p > 0.050$), and the mean differences (effect sizes) are very small ($\eta^2 < 0.010$).

Conclusions

Nature and direct contact with all living beings motivated children to discover new ways of movement and new kinaesthetic senses, develop body orientation and learn the meaning of movement expressions.

Children used body language to express their experience, emotions, thoughts, and attitude toward topics dealt with, and thus reinforced the early science knowledge they had gained.

The children's movements were original, non-stereotypical, and we noticed significant progress in their use of creative movement elements.

The experience made them realize how each of them placed special emphasis on certain specifics, and this only encouraged them to keep an even closer watch. Looking at each other move, they borrowed each other's motifs and so the object of observation evolved into new and richer content. They learned from nature and from their peers. They commented on each other's moves and supplemented each other.

The activities promoted children's social development and positive emotions toward nature.

The natural outdoor places offered new discoveries and a lot of space to express through creative movement.

We conclude that an early science experience changes the child's way of observing nature. The child, and later the adult, becomes more sensitive to his surroundings and more responsible in his actions. And this is precisely what we would like to achieve.

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Group Therapy Program for Families with Transgender Member: Propelling Gender Differentiation

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This study explored impacts of a newly developed gender affirmative Group Therapy Program informed by Bowen Family Therapy approach (Bowen, 1978) for transgender individuals and their families (BFTTG). All transgender participants met criteria of gender dysphoria classified by DSM-V (DSM-V, 2014). The recent research of gender dysphoria shows that the process of transitioning is accompanied by anxiety, depression, self-mutilating, and high rate of suicide attempts (Dargie, Blair, Pukall, & Coyle, 2014; Craig, Austin, & McInroy, 2014; Singh & Burnes, 2009; Levitt & Ippolito, 2014; Mitchell, Ybarra, & Korchmaros, 2014; Meier, Motmans, Ponnet, & T'Sipen, 2012). Involvement and support of family in this process is crucial and it is a predictor of successful transition and life satisfaction (Ryan, Huebner, Diaz, & Sanchez, 2010; Hill, Menvielle, Sica, & Johnson, 2010). We have no evidence of any research regarding a structured group therapy program for this at-risk population with the whole family system (parents, guardians, youths and their siblings) involved. The Group Therapy Program (BFTTG) was predicted to be effective for these families. The program was examined on transgender individuals and their family members who were monthly attending BFTTG. The total sample consisted of 22 participants. The results showed the newly developed program helped to mobilize social support in family and related social groups. Length of participants' attendance in the group was related to decrease of anxiety in participants. Themes of the Group Program were also associated with improved level of life satisfaction perceived by participants.

Keywords: family group therapy program, gender dysphoria, transgender individuals, emotional distress, life satisfaction

The purpose of this study was to explore impacts of a newly developed gender affirmative group therapy program for transgender or gender non-conforming individuals (Bowen Family Therapy Transgender Group, hereinafter BFTTG); diagnosed with gender dysphoria classified by DSM-V as 302.85 (F64.1) Gender dysphoria in adolescents and adults and/or Gender dysphoria in children as 302.6 (F64.2) (DSM-V, 2014), and their families.

Involvement and support of a family of a non-conforming or transitioning family member is crucial and it is closely related to a life satisfaction perceived by the respective member during the process of transition and afterwards.

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The program (BFTTG) was developed based on postulates of Bowen's Family Systems Theory—Bowen therapeutic approach (Bowen, 1978) to guide families with a transgender or gender non-conforming member through the whole process of their transition and a gender challenging journey. The program targets decrease of emotional distress caused by gender dysphoria, alleviation of anxiety, and uncertainty about affordable life satisfaction.

The program was examined on family members of five respective ongoing support groups that were meeting regularly monthly since September 2014. Each group had a different format. There was BFTTG for trans teens, BFTTG for trans children, BFTTG for parents and allies, BFTTG for trans adults, and BFTTG mixed group for anyone—whole families, or any individual family member. The total sample consisted of 22 participants.

From the perspective of Bowen Family Systems Theory, family represents a unit (Bowen, 1978). In that respect, gender transition of a family member requires transition of the family system equally. The BFTTG approach involves work with the entire family system (parents, guardians, youths and their siblings), exploration of identity and identity shaping, self-differentiation, targeted decrease of anxiety via progressing transition on a scale of self-differentiation towards individuation, yet obtaining and accepting support of family towards togetherness—experience of belonging (Bowen & Kerr, 1988).

The recent research of gender dysphoria shows that insecure gender identity in the process of transitioning, including the phase of questioning one's birth-assigned gender, is almost always accompanied by some kind of an emotional distress such as anxiety, depression, uncertainty about members' future and life, post-traumatic stress, substance abuse, self-mutilating, and high rate of suicide attempts. The transgender and gender non-conforming population belongs to "at-risk population" (Bostwick et al., 2010; Dargie et al., 2014; Craig et al., 2014; Singh & Burnes, 2009; Levitt & Ippolito, 2014; Mitchell et al., 2014; Meier et al., 2012; Zucker, Wood, Singh, & Bradley, 2012; Rothblum et al., 2013; Mathy, 2002; Pitts, Couch, Mulcare, Croy, & Mitchell, 2009). Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People (herein after referred as SOC) mention also a higher prevalence of autism spectrum disorders in this population (Coleman et al., 2011).

Gender Dysphoria and the Role of Family Support

Involvement and support of family in the treatment—psychotherapy of gender dysphoria is crucial and it is a predictor of successful transition and life satisfaction. The lack of family involvement and support over the transitioning process belongs to the most reported reasons of psychological distress by the transgender population (Fausto-Sterling, 2012; Vries & Cohen-Kettenis, 2012; Ryan et al., 2010; Hill, Menvielle, Sica, & Johnson, 2010). Despite its importance, the significant role and a possible positive impact of family involvement is not adequately reflected in treatment approaches that are mostly individual—gender dysphoria diagnosed and client-centered. SOC include family or group psychotherapy as a treatment option, besides individual medical treatment, either hormonal or surgical (Coleman et al., 2011). SOC guidelines of care also list family support as a possible psychological and social intervention for children and adolescents. SOC report that self-exploration, understanding, recognition, self-acceptance, self-efficacy, affirmative approach to self-identity belong among the core competencies and targeted approaches when working with transgender and gender non-conforming clients (Coleman et al., 2011). The American Association for Lesbian, Gay, Bisexual,

and Transgender Issues in Counseling (ALGBTIC) refers only to an individual care with the respective clients in Competencies for Counseling with Transgender Clients (Burnes et al., 2003).

Bowen Therapeutic Approach Paradigm for Group Therapy with Transgender and Gender Non-Conforming Families

Bowen Family Systems Theory therapeutic perspective approaches individuals as an undividable part of a family system. Every human being enters the world dependent on others for their well-being (Bowen, 1978).

Family represents an emotional unit. The emotional unit provides a basic foundation of any family system. Emotional system represents a general survival drive common to all living species, as well as unique survival patterns, strategies, and know-hows of the respective, particular family system that are transmitted from generation to generation (Bowen, 1978).

Differentiation of self is a continuing process of encountering of two core life forces: togetherness—the need to belong to a family, and individuality—the ability to act and take decisions independently and confidently alone. Functional level of self-differentiation relates to a management of everyday situations and challenges. Individuals with higher level of self-differentiation experience less anxiety and are less emotionally reactive. Higher level of self-differentiation and lower level of anxiety is not possible to reach through turning away from the respective family but in relation to the family. Well self-differentiated individuals are capable to direct their life and solve problems, to be self-sustaining and living independently and successfully (Bowen & Kerr, 1988).

Transgender and gender-questioning individuals face self-differentiation from their assigned gender to their expressed, authentic gender. This process of gender differentiation is accompanied by a significant level of emotional distress. Well gender differentiated individuals are capable to use potential of the assigned gender and benefit from it in their expressed gender with low level of anxiety and dysphoria. Successful gender differentiation and well-being is determined by getting support from their family, significant others, or any related social group.

A Bowen therapy informed approach applied in group therapy with family of transgender and gender-questioning population features participation of the nuclear family system (identified transgender or gender-questioning individual, their parents or legal guardians, and possible sibling/s). The program intends to decrease anxiety in the family system and in the individual. Lower level of anxiety allows improvement of a functional level of self-differentiation of individuals, and prompts ability to focus on identifying and holding on own personal values, and goals. Participants are guided to take control over their emotional processes with help from their families as a form of building resilience through the transitioning process. BFTTG searches for gender models in family as a way of recognition and self-identity acceptance, and use of self-differentiation from at birth assigned gender identity (based on a biological sex) as a benefit and condition for success in the expressed gender identity. The program also features psycho-education and coaching through the transitioning process.

The purpose of the study was to examine whether the newly developed program helped to mobilize social support in family and related social groups (allies) and if the involved family members and the length of attendance influenced participants' level of anxiety. The study also brings an overview of group topics assessed by participants that are related to their experience of life satisfaction and the most frequent group topics preferred by participants.

Literature Review

Gender Identity Development and Family Support

Recent research in this area approaches transgender and gender-questioning individuals as at-risk population and examines way how to increase their resilience, provide them with support, resources, and strategies for dealing with social pressure (real or anticipated) and fear from stigma (Minter, 2012).

Researchers from the department of Biology and Gender Studies of the Brown University, Providence, developed a dynamic systems framework for gender identity development and stressed a significant impact of parent-child relationship on gender identity development. Gender identity and gender-related behaviors emerge as a pattern of several cooperating parts—a child finds the experience of self within a relationship in which he or she is already seen. The internalization of the gender/body mirror becomes a part of the child's procedural knowing (Fausto-Sterling, 2012).

The Dutch Approach study determined comprehensive assessment of gender dysphoria by a good assessment of family functioning and the role of the youth's gender variant behavior on family functioning (Vries & Cohen-Kettenis, 2012). Researchers assume that building of secure and positive self-image can be obtained via developing a rapport with adolescents and their parents, particular via obtaining open and nonjudgmental contact with the youths and their parents (Vries & Cohen-Kettenis, 2012). Researches at the Family Acceptance Project at San Francisco State's Marian Wright Edelman Institute for the Study of Children, Youth, and Families examined that gender nonconforming individuals who receive support from their families for their sexual or gender identities show better mental health functioning than their peers who do not (Ryan et al., 2010; Hill, Menvielle, Sica, & Johnson, 2010). Another research study conducted by Ryan and colleagues (Ryan, Russell, Huebner, Diaz, & Sanchez, 2010) showed the compelling relationship between family acceptance of transgender individuals and significantly higher level of self- esteem, social support, and general health in adulthood (Ryan et al., 2010). Also family support towards the youth's gender expression belongs to the most significant protective factors and predictors of their life satisfaction (Ryan et al., 2010). Canadian research study of suicide risk in transgender community found high social support, specifically parental support, is the potential prevention of consideration of suicide (Bauer, Deutsch, Massarella, & Scheim, 2014).

Therapeutic approaches towards transgender and gender-questioning clients. Stein (2012) suggests that the only appropriate interventions for individuals who experience distress about their gender at the phase of questioning their gender and exploring their gender identity, are to provide counseling to the whole family (Stein, 2012). Dianne Ehrensaft, child clinician from the Department of Pediatrics, University of California San Francisco, developed a creative individual clinical approach called "True gender self therapy (TGST)" (Ehrensaft, 2012). The goal of the therapy is to help the clients to establish gender resilience and explore authentic gender identity, yet acknowledge possible social limits, constraints that the clients have to be aware of. She also recommends participation in support groups for the youths and separate support groups for parents (Ehrensaft, 2012). Affirmative therapy adopts a positive view of transgender clients by respecting their self-defined identities (Benson, 2013). Interviews conducted with seven transgender individuals revealed these expected outcomes of effective therapy: improvement of quality of life that refers to well-being, relationship satisfaction, and emotional health. Participants considered affirmation of identity as an essential part of the effective therapeutic help (Benson, 2013). Researchers from the Department of Psychiatry and Behavioral

Sciences, Children's National Medical Center, Washington, introduced a clinical program designed for transgender families (Menvielle, 2012). Although the program is separating parental and youths group, it belongs to one out of very few clinical programs designed for transgender families in this field (Menvielle, 2012). Resiliency in the trans individuals is best achieved through a supportive family environment that fosters the development of self-esteem and social competences (Wyman, Sandler, & Nelson, 2000). Team of Canadian clinicians from the Gender Identity Service at the Centre for Addiction and Mental Health in Toronto introduced a therapeutic model that supports trans individuals in adapting to whatever stressors may be associated with their gender identity, improves experience of their well-being, and leads parents to help their children with adaptation to various developmental tasks (Zucker et al., 2012). An Interdisciplinary Clinic for Youths with gender dysphoria, under the Pediatric Center in Harvard Medical School, Boston, approaches "homophobia and transphobia" among family members and related social environment with a collaborative strategy (Edwards-Leeper & Spack, 2012). Team of researchers from the University Toronto and the Barry University found out that social connectedness has been identified as a significant predictor of well-being for the trans population (Detrie & Lease, 2008), and has been found to positively influence self-esteem and decrease anxiety and depression (Kohut, 1984; Lee & Robbins, 1998). Sharing authentic experiences of participants in group is supposed to have a powerful impact on decreasing sense of isolation of participants during a potentially stressful period of gender identity development (Craig et al., 2014). Michael Rogers from the University of California, in Santa Barbara, was mapping specialized LGBTQ community based programs focused on an improvement of emotional health and life satisfaction of the targeted population (Rogers, 2012). The effect and beneficial impact of the program is in a community involvement and support (Rogers, 2012).

Life satisfaction. The general goal of psychotherapy with transgender and gender-questioning families according to SOC is to help to maximize client's psychological well-being, quality of life and reach comfortable level of life satisfaction (Coleman et al., 2011).

Expression of life satisfaction is very individual as well as its experience for each person in the targeted group (Phelps et al., 2012). Research of everyday life satisfaction of ethnic minority groups found the significance of the experience of feeling of adaptation and belonging to the major population (Verkuyten, 2008). Scientists bring evidence of three significant factors of life satisfaction: psychological distress, social support, and spirituality (Phelps et al., 2012). Emerging research of transgender population confirms that involvement and support of family is a predictor of successful transition and life satisfaction (Ryan et al., 2010; Hill et al., 2010; Fausto-Sterling, 2012; Vries & Cohen-Kettenis, 2012).

Method

Sample

The current sample was comprised of 22 trans or gender-questioning individuals (age 7-68; average age of participants 36.47) and their close family members. Of the 22 participants in the BFTTG group, there were 14 trans individuals and 8 family members. Nine trans individuals represented males to females (MtF), and five females to males (FtM). All participants were attending BFTTG groups for 1 month to more than 1 year. The most common racial demographic was Caucasian (94.5%) and 4.5% was Hispanic. 91% of all participants had some evidence of mental health issues in the family history, specifically depression, anxiety, panic attack,

suicidal ideation or suicidal attempt. 59% of trans individuals had their family involved and supportive either directly or indirectly, whereas 41% (all of them trans adults) did not have family involved and supportive. Of 22 trans individuals, there were 21% trans heterosexuals, and 79% homo or bisexuals. 27% of participants reported history of LGBTQ member in the close or extended family. 59% of participants were high school graduates, 9% college graduates.

Data were collected via nonprobability sampling—not a random selection—and might not be a representative of the population. Participants represent a convenient sample consisting of trans and gender-questioning individuals, and their family members who were attending BFTTG support groups between September 2014 and May 2016.

Group participants accepted to the family transgender support group were all individuals who reported significant discomfort concerning their gender and their close family members. Exclusion criteria was English proficiency or refusal to sign an informed consent declaration.

Procedures

All participants who were attending transgender support groups (about 100 individuals) with GET Network Foundation, non-profit organization, were informed about an offer to participate in the research. All group members obtained two questionnaires: The Beck Anxiety Inventory (BAI), for this research developed questionnaire the Gains from BFTTG Program, and a brief demographic inventory. All participants signed an informed consent and filled out anonymously the above stated forms.

Besides the participants, group leaders were asked to monitor the most frequent topics brought by all groups participants over one year. All group leaders filled out 10-point Likert scale instrument "The Group Topics Scale" that was designed for the purpose of this study.

Measures

A paper-and-pencil brief Demographic questionnaire, developed for this study, contains 10 items and it assesses assigned gender, expressed gender, family involved, race, education, sexual orientation, history of mental health issues in a family, LGBTQ individual in close or extended family, religion, education.

The Beck Anxiety Inventory (BAI) (Beck & Steer, 1993), a paper-and-pencil self-report questionnaire assesses in 21 4-point Likert scale items the severity of anxiety in the youth and adults. The BAI maximum score of the summed points is 63. Score of 41-63 is considered for a severe anxiety, 26-40 for a significant anxiety, 15-25 moderate anxiety, under 15 low level of anxiety—healthy. Evaluation of reliability and validity of the Beck Anxiety Inventory the BAI proved highly internally consistent—Cronbach's alpha = 0.94 (Fydrich, Dowdall, & Chambless, 1992).

The Gains from the BFTTG Program questionnaire was developed for this research as a self-report paper-and-pencil questionnaire to assess expectations of participants from the BFTTG program. The Gains from the BFTTG Program were interpreted to participants as their personal expectations and their perception that represent their individual experience of well-being and life satisfaction. This instrument consists of 17 5-point Likert scale items on which participants express to what extent they consider listed gains significant for them. Likert scale is anchored as 5 = "Significantly important"; 4 = "Somewhat important"; 3 = "Neutral"; 2 = "A bit important"; 1 = "Not important". Among the possible gains there are listed items such as unconditional acceptance, support of expressed gender, handling stress, dealing with family relationships, help from the group and group members, psycho-education.

The collected data were quantitatively assessed. Descriptive statistics (frequency distribution, central tendency, dispersion) was used to describe demographic structure of participants (Figure 1), to depict frequency of topics in all five groups over one year (Table 2), central tendency was used to measure gains from the group program related to the participant's well-being and life satisfaction (Figure 2), and to show an average level of anxiety, average level of anxiety of participants attending the BFTTG less than 1 year, and those attending the program more than 1 year (Figure 3). Then, correlations were used to assess relation between attendance (from 1 month to more than 1 year) in the group (independent variable) and level of participants' anxiety (dependent variable) (Table 1).

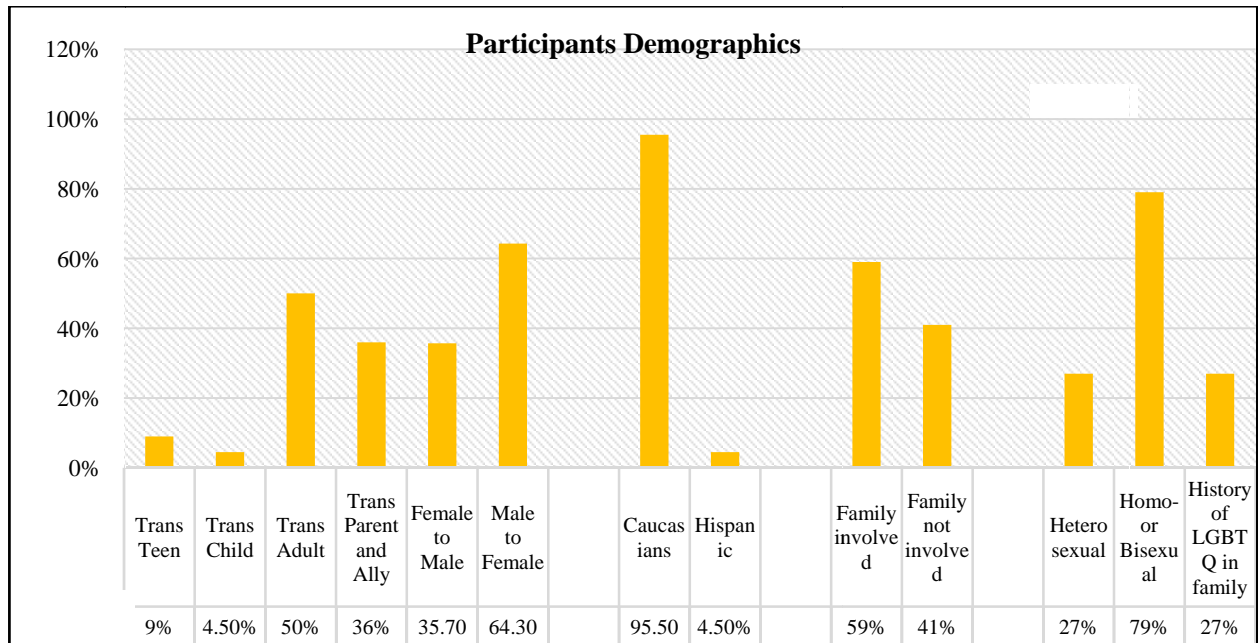|	Trans Teen	Trans Child	Trans Adult	Trans Parent and Ally	Female to Male	Male to Female		Caucasians	Hispanic		Family involved	Family not involved		Heterosexual	Homo- or Bisexual	History of LGBTQ in family
	9%	4.50%	50%	36%	35.70	64.30		95.50	4.50%		59%	41%		27%	79%	27%

Figure 1. Demographics. History of LGBTQ in Family refers to any close or extended family member/s who expressed or expresses himself/herself either as transgender, gender non-conforming, homosexual, bisexual, etc.
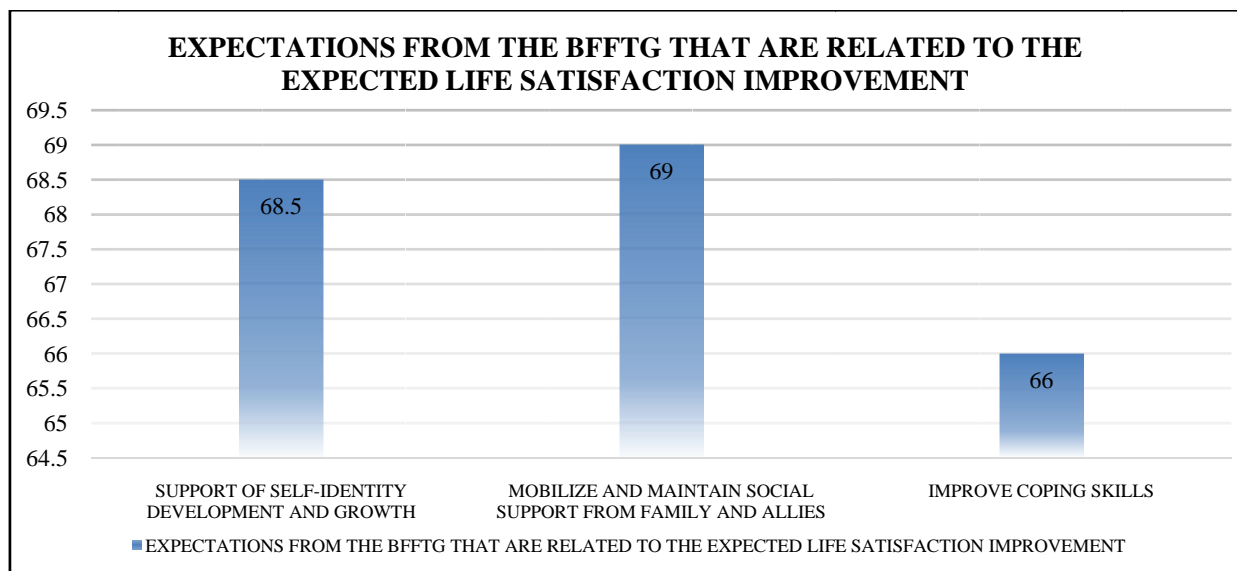

Figure 2. Gains from the group program related to the participant's well-being and life satisfaction.
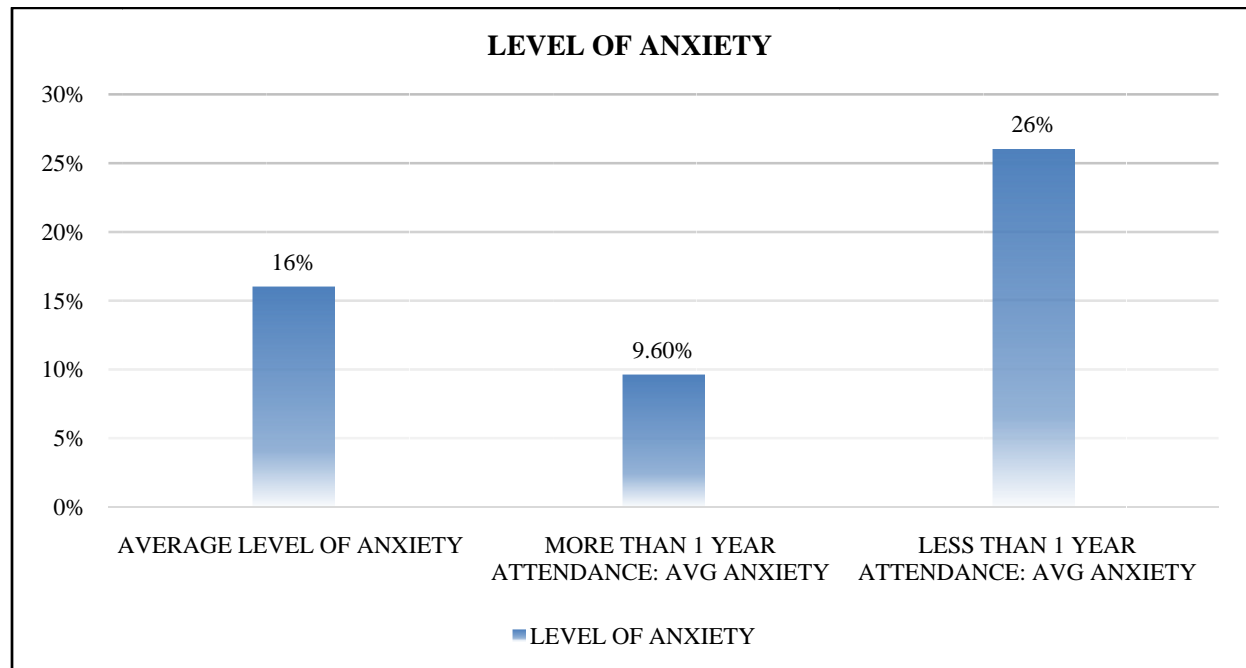
Figure 3. Level of anxiety in participants.

Table 1

Correlation of Attendance in the Group and Level of Participants' Anxiety (N = 19)

		Length of attendance in BFTTG	Level of anxiety measured by BAI
Length of attendance in BFTTG	Pearson Correlation	1	-0.353
	Sig. (2-tailed)		0.138
	N	19	19
Level of anxiety measured by BAI	Pearson Correlation	-0.353	1
	Sig. (2-tailed)	0.138	
	N	19	19

Notes. The level of anxiety (dependent variable) was assessed on Likert Scale 0-3, with 3 = "Strong"; 2 = "Moderate"; 1 = "Weak"; 0 = "Nothing"; The gains from the BFTTG program (independent variable) were assessed on Likert Scale of 1-5, with 5 = "Significantly important"; 4 = "Somewhat important"; 3 = "Neutral"; 2 = "A bit important"; 1 = "Not important".

Table 2

Frequency of Group Topics Across Transgender Support Groups (N = 5)

	Trans Gender Support Group	Sexuality/ dating	Expressed/ assigned identity	Treatment issues	Grieving, loss	Family and relational issues	My life as a trans-daily issues	My life as a trans at work, at school, etc.	Bullying/Mobbing/Oppression of my rights	Coping skills	Coming out	Others[*]
N	5	5	5	5	5	5	5	5	5	5	5	5
	0	0	0	0	0	0	0	0	0	0	0	0
Mean	3	4.4	9	4.4	3.6	9.6	7.6	9	7.2	8	7.6	8.2
Std. Error of Mean	0.707	1.364	0.632	1.47	1.691	0.245	0.678	0.632	0.663	0.894	0.245	0.917
Median	3	5	10	6	4	10	8	10	7	9	8	8
Std. Deviation	1.581	3.05	1.414	3.286	3.782	0.548	1.517	1.414	1.483	2	0.548	2.049
Variance	2.5	9.3	2	10.8	14.3	0.3	2.3	2	2.2	4	0.3	4.2

Table 2 to be continued

Skewness	0	-0.543	-0.884	-0.518	0.516	-0.609	-0.315	-0.884	-0.552	-0.938	-0.609	-1.022
Std. Error of Skewness	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913	0.913
Kurtosis	-1.2	-0.003	-1.75	-1.687	-0.725	-3.333	-3.081	-1.75	0.868	-0.188	-3.333	0.918
Std. Error of Kurtosis	2	2	2	2	2	2	2	2	2	2	2	2
Range	4	8	3	8	9	1	3	3	4	5	1	5
Minimum	1	0	7	0	0	9	6	7	5	5	7	5
Maximum	5	8	10	8	9	10	9	10	9	10	8	10

Notes. * Others: Legal Issues, References, Friends' Acceptance; The frequency of group topics was monitored and assessed by group leaders on Likert Scale from 1-10, where 1 is the least frequent and 10 is the most frequent agenda in the support groups. The three most frequent topics across the groups were: Expressed Identity/Assigned Identity; Family and Relational Issues; My Life as a Transgender Individual at Work, School, etc. All three topics are related to being socially accepted (how to pass and get support in a microsystem-family and allies, and in a mesosystem-related social groups). All three topics are significantly related to reported gains from transgender support group program. The accomplishment of the goals/gains expected from the groups refers to a quality of life of trans community.

Results

The three most frequent topics across all five groups were Family and Relational Issues ($M = 9.60$, SD 0.548), Expressed Identity/Assigned Identity ($M = 9.00$, $SD = 1.414$), and My Life as a Transgender Individual at Work, School, etc. ($M = 9.00$, $SD = 1.414$).

Gains from the BFTTG program related to the participant's well-being and life satisfaction with the highest frequency were "Mobilize and Maintain Social Support from Family and Allies" (69% of participants), "Support of Self-identity Development and Growth" (68.5% of participants), and "Improvement of Coping Skills" (66% of participants). Other significantly less charged outcomes (between 40%-50% participants chose them) were psycho-education, health care, social status, and employment.

The average level of anxiety by all participants was 16.0 BAI points ($M = 16.05$, $SD = 13.962$) that refers to moderate anxiety (Beck & Steer, 1993). The highest level of measured anxiety was 50.0 BAI and the lowest level of measured anxiety was as low as 1.0 BAI points. Participants who were attending BFTTG program for more than 1 year had an average level of anxiety 9.6 BAI points that refers to low level of anxiety (Beck & Steer, 1993). Participants attending BFTTG program for less than 1 year had an average level of anxiety 26.0 BAI that refers to significant level of anxiety (Beck & Steer, 1993).

Correlation was used to examine if there is any relationship between the length of attendance of the BFTTG program and level of anxiety in participants. The mean time of attendance was 7.63 months ($SD = 5.145$). The shortest time was 1 month and the longest time was over one year. The correlation coefficient was $r(19) = -0.353$, $p < 0.05$. The results suggest a negative correlation with moderate magnitude between the attendance and anxiety.

Discussion

Support groups for transgender and gender-questioning individuals are usually unstructured groups without any particular agenda or program. The general aim is to provide social support. A newly developed program is focused on mobilization of social support in family and related social groups (allies). BFTTG is informed by Bowen Family Systems Theory therapeutic approach and aims to decrease an emotional distress

related to gender dysphoria, alleviate anxiety, depression, and uncertainty about member's life and future via progressing transition with having a respective family system involved. From the perspective of the Bowen Family Systems Theory, gender transition of a family member requires transition of the family system equally.

In compliance with the Bowen Systems Theory, the format of the group was a family. Opening the group to all family members allowed them to be involved either directly as participants of the group or indirectly as supporting the particular participant in the group (bringing him/her to the group, sharing, communicating with other families of participants). Family group aimed to mobilize family support as a context that provides a basic foundation in the process of a self-differentiation of the transgender and gender-questioning member. Functional self-differentiation of the transgender and gender-questioning member is possible when level of anxiety in the family system and in the individual is low. Participants were guided to take control over their emotional processes with help from their families as a form of building resilience through the transitioning process. BFTTG searched for gender models in family as a way of recognition and self-identity acceptance. BFTTG used self-differentiation from at birth assigned gender identity (based on a biological sex) as a benefit and condition that navigated participants successfully to the expressed gender identity.

Participants were asked at the beginning of the BFTTG about their expectations, gains from BFTTG that would help them to improve their perceptions of their individual life satisfaction. Group leaders then monitored frequency of the topics discussed as the preferred, important, and required by participants in the groups.

The program was structured as flexible so it could accommodate all family members. The topics were broad and group leaders approached the topics from the developmental perspective of the targeted support group of participants. The total sample consisted of 22 participants who attended BFTTG support group for a period of one month through one year.

This research study examined two factors: participation and/or involvement of the entire family system in the newly developed BFTTG program for transgender/gender-questioning individuals and their families and its effect on their level of anxiety, as well as its relation if any, to their well-being and experience of life satisfaction.

The results indicate that more than half of participants 59% had family involved in the BFTTG program. The BFTTG program structured for the entire family system helped to mobilize attendance or either emotional or instructional support of families of transgender and gender-questioning individuals. Participants without family support belonged mostly to participants in age category 50+.

The univariate analysis shows that participants who were attending BFTTG program for more than 1 year had an average level of anxiety significantly lower than participants attending BFTTG program for less than 1 year. Also the correlation of relationship between the length of attendance of the BFTTG program and level of anxiety in participants showed an association between decreasing anxiety with increasing attendance in BFTTG program.

The three most frequent topics across the groups were: Expressed Identity/Assigned Identity; Family and Relational Issues; My Life as a Transgender Individual at Work, School, etc. The three most frequent topics in all groups are related to a need of being socially accepted (how to pass socially, how to get support and acceptance in the microsystem of a family, and in related social groups). All three topics are also related to reported gains from the BFTTG program that reflect participants' well-being and life satisfaction—mobilize and maintain social support from family and allies, support of self-identity development and growth, and improvement of coping skills as a condition of social acceptance.

The implications of research results might be beneficial for this unique at-risk population. BFTTG program has a potential to be effectively used for treatment of gender dysphoria and psychological distress related to this diagnosis. The implications might positively influence life satisfaction and mental health of the targeted population.

Limits and Ethical Issues

All participants signed the informed consent regarding the research study. The number of participants was small and it represented a non-probability sample. We took into consideration other variables that potentially might influence research results among them at birth assigned gender and expressed gender (female to male, male to female); age; history of mental health issues in family; and intensity and duration of family support. We used correlation to assess relationship between gender, age, and level of anxiety but the correlation was not significant.

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Weight Bias Internalization: Semantic Differential Measurement and Treatment Implications

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Stereotypic attributions about "overweight people" (called weight stigma or bias) and "slender people" were elicited through semantic differential procedures and compared with self-attributions on the same bipolar personality trait scales. More negative personality traits were attributed to overweight people than to slender people and self-descriptions. Overweight subjects attributed negative traits to "overweight people" but did not self-endorse these negative personality characteristics. Internalization of weight bias was associated with a negative body-image and binge-eating, irrespective of actual body weight. Although these correlations are consistent with those of Carels et al. (2013), re-analysis of our findings using Grice's (2011) "Observation Oriented Modeling" method showed a low percentage of correct classification of participants' self-perceived weight stigma based on negative body image. Caution is urged in inferring psychological maladjustments of persons internalizing weight bias in the absence of research showing that these effects hold for actual persons rather than statistical parameters.

Keywords: weight bias internalization, obesity stigma, negative personality traits, weight loss maintenance

Introduction

Biopsychosocial theories of obesity and diet-consciousness assume the existence of a negative stereotype for overweight and the social desirability of thinness (e.g., Hawkins & Clement, 1984; Rodin, 1977). Negative personality traits are attributed by both females and males to the overweight (endomorphic) body build (e.g., Carels et al., 2011; Crandall, 1994; Harris, Harris, & Bochner, 1982). More recently this negative stereotype for obesity has been called weight stigma or weight bias (Puhl & Heuer, 2009; Puhl & Suh, 2015). Given the ubiquity of the negative stereotype for this weight bias, it is a question of considerable theoretical and practical interest as to the psychological mechanism through which a generalized cultural expectancy regarding the overweight stereotype becomes personally relevant, i.e., when these negative trait descriptors are self-attributed. Several researchers have recently been studying this internalization of the weight bias/stigma (e.g., Carels et al., 2011, 2013; Durso & Latner, 2008; Gordijn, 2010; Lillis, Luoma, Levin, & Hayes, 2010; Major, Hunger, Bunyan, & Miller, 2014; Puhl, Moss-Racusin, & Schwartz, 2007), how to ameliorate its impact (e.g., Danielsdottir, O'Brien, & Ciao, 2011), and its apparent refractoriness to change as a function of weight-loss treatment (Carels et al., 2009, 2014; Levy & Pilver, 2012).

Carels et al. (2013) described what they termed a novel finding that although overweight clients participating in a weight loss program endorsed the negative stereotype of obesity involving negative personality

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traits (e.g., lazy, undisciplined), they did not self-attribute these undesirable traits. These self-attributed negative traits were also significantly associated with a measure of internalized weight bias, and with self-report measures of depression, binge eating, and negative body image. Examining discrepancy scores between obese negative stereotype trait ratings and self-trait ratings, they found that the greater the difference (i.e., higher the obese negative stereotype ratings and the lower the negative self-trait ratings) the lower the depression, binge eating, and body dissatisfaction. Finally, they hypothesized that those clients who did self-attribute these negative trait characteristics (i.e., those who internalized the weight stigma/bias) rather than the positive traits of normal weight persons would be less successful in losing weight and sustaining their weight loss. The Carels et al. (2013) study, if replicated, has important implications for the treatment of obesity and eating disorders.

The purposes of the present study were: (1) to describe a semantic differential procedure used in an unpublished study (Doell & Hawkins, 1981) to demonstrate the existence of a negative stenotype for overweight people and a set of more positive stereotypic attributions about "slender people"; (2) to examine the relationship between negative stereotypic attributions about "overweight people" to self-attributions using the same bipolar adjectives (i.e., to determine whether subjects who themselves are overweight would self-endorse-negative trait terms attributed to overweight people); (3) to study the relationship between these stereotypic attributions and personality self-descriptions to perceptions of physical and behavioral characteristics (e.g., body image, eating "restraint", and binge eating tendencies); (4) to investigate whether students participating in a weight control program self-attribute more of the negative trait terms of the overweight stereotype than do equivalently overweight subjects not in treatment; and (5) to reanalyze these data using Grice's (2011) "Observation Oriented Modeling" to determine whether these parametric effects are verified by the percentage of correct classifications of actual participants as a function of the hypothesized causal relationships.

Method

Samples

Three samples of college undergraduates of varying body weights were drawn from psychology classes. Students volunteered for this research for extra credit. The first sample contained 188 females and 85 males, the second sample had 124 females and 46 males, and the third sample contained 44 females and 20 males. Body weight percentages were calculated as a deviation percentage from the "desirable" weight for males and females with a medium body frame (Metropolitan Life Insurance Company, 1959). Subjects were considered overweight if their self-reported body weight was at least twenty percent greater than the desirable weight for their stated heights. A fourth sample of 15 overweight clients (11 females, 4 males) (mean excess weight of 25%) from a behavioral weight control program also participated in this study. For the data re-analysis using Grice's (2011) "OOM" method, the first sample and third sample were used. Informed consent was obtained from all individual participants included in the study.

Procedure

The semantic differential procedure (Osgood, Suci, & Tannenbaum, 1957) was used to elicit the meanings of three concepts: "myself", "overweight people" (sex and degree of overweight unspecified), and "slender people" (sex and weight unspecified). The same 44 scales comprised the semantic differential used to evaluate each of the concepts. Each 5-point scale was anchored on the extremes with bipolar adjectives and had a neutral point. Sample adjective pairs included: independent vs. dependent; active vs. passive; healthy vs. sick; graceful

vs. awkward) [1] . The third sample completed these 44 scales for four concepts: "myself", "overweight people" (of same sex as subject, 15 pounds overweight), "slender people" (of same sex as subject, 10 pounds underweight), and "obese people" (of same sex as subject, 35 pounds overweight). The Negative Self-Image Scale [2] was administered to the first and second samples. The Binge Scale (Hawkins & Clement, 1980) and the Restraint Scale (Herman & Polivy, 1975) were obtained from subjects in the second sample.

Results

For both the first and second samples, Oneway ANOVAs on the 44 semantic differential scales revealed that the meanings of the concepts "myself", "overweight people", and "slender people" differed significantly ($p < 0.001$). The concept "overweight people" was judged most extreme in the socially undesirable direction for 38 of the 44 scale means. To simplify analysis of concept differences, 25 bipolar adjective scales were chosen for calculation of a summary score for the "overweight people" concept, yielding a Cronbach's alpha of 0.85. The decision rule for selecting this subset of adjectives was that the mean rating on each for the "overweight people" concept fell on the opposite side of neutrality from the ratings from the corresponding adjectives for the concepts "slender people" and "myself". For all 25 bipolar adjectives, the mean ratings for "overweight people" fell on the socially undesirable side of neutrality, in contrast to the socially desirable ratings for the other two concepts. The means and standard deviations for the semantic differential concept scores for male and female, normal weight and overweight subjects from the three samples (plus the clinic sample) are presented in Table 1. The higher the average score, the more negative (socially undesirable) the stereotypical attribution. The concept "overweight people" was rated more negatively by all groups relative to the ratings for the other concepts.

ANOVAs with two between-subject factors (sex, body weight) were performed on each of the three concept scores. For the first sample, for the concept "overweight people" there was a statistically significant main effect for body weight, $F(1, 246) = 11.74$, $p < 0.001$, with the overweight students (mean excess weight = 28%, $SD =$ 17.0) evaluating the concept less negatively than did the normal weight students. For the concept "slender people", males' scores were significantly more negative (higher) than those of females, $F(1, 246) = 5.67$, $p < 0.05$. There were no sex or weight related differences for the concept "myself". For the second sample, ANOVAs performed on each of the concept scores revealed no statistically significant main effects.

Table 1 shows that obese females in the classroom sample and in the clinic sample rated the concept "myself" almost as favorably as did their normal weight counterparts, suggesting the operation of a self-protective bias. This interpretation should be considered within the context of findings with the other measures. Overweight students in both samples were more critical of their physical appearance relative to the normal weight students, and the former reported more eating "restraint" and stronger binge eating tendencies. Regardless of the subjects' actual body weights, individuals who thought they were fat (i.e., had a negative body image) reported a more negative "self" concept (Table 2).

Table 3 shows the data from a replication of this semantic differential study (the third sample), in which the evaluative task was refined. The target concepts "overweight people" and "slender people" were operationally defined as to gender and pounds, and a more extreme concept "obese people" was added. The results were that the concepts "overweight people" and "obese people" were rated more negatively relative to the concepts

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[1] For copies of the semantic differential scales used in this research please e-mail the author (rhawkins@utexas.edu).
[2] Nash, personal communication, 1977. For further information about the Negative Self-Image Scale, see Hawkins & Clement (1980), as cited in the references.

"myself" and "slender people". While the overweight students' attributions for the concepts "overweight people" and "obese people" were as negative as those of the normal weight students, once again the former's scores on the concept "myself" were nearly as favorable as were the latter's, thus replicating the effect found in the earlier studies.

Table 1

Means and Standard Deviations for the Semantic Differential Concept Scores for Male and Female, Normal Weight and Overweight Subjects in Several Samples

Sex	Weight	Myself		Overweight		Slender	
		M	*SD*	*M*	*SD*	*M*	*SD*
		Initial	Sample				
Males[a]	Normal	2.31	0.47	3.49	0.45	2.57	0.39
Females[b]	Normal	2.33	0.39	3.46	0.42	2.44	0.40
		Second Sample					
Males[c]	Normal	2.34	0.44	3.39	0.49	2.45	0.34
Females[d]	Normal	2.35	0.43	3.53	0.43	2.38	0.42
		Third Sample					
Females[e]	Clinic Obese	2.54	0.36	3.95	0.40	1.87	0.34
Females[f]	Classroom Obese	2.38	0.44	3.50	0.32	2.48	0.46

Notes. [a] $n = 86$; [b] $n = 188$; [c] $n = 46$; [d] $n = 124$; [e] $n = 11$; [f] $n = 1$.

Table 2

Correlations among Concept Measures, Negative Self-Image (NSI), Restraint (EST), Binge Scale (BST), and Excess Weight Percentage (WGTPERC) for the Second Sample (n =117)

	Self	Overweight	Slender	NSI	RST	BST	WGTPERC
Self		0.18[*]	0.01	0.41[***]	0.16	0.29[***]	0.14
Overweight			-0.42[***]	0.13	0.16	0.09	-0.01
Slender				-0.12	-0.09	0.00	0.02
NSI					0.58[***]	0.57[***]	0.52[***]
RST					---	0.69[***]	0.50[***]
BST						---	0.29[***]
WGTPERC							---

Notes. [*] $p < 0.05$; [**] $p < 0.01$; [***] $p < 0.001$; These instruments are scored in the negative (socially undesirable) direction.

Table 3

Means and Standard Deviations for the Semantic Differential Concept Scores for Male and Female, Normal Weight and Overweight Subjects in the Second Replication Sample, in Which the Sex and Weight of the Target Person Were Specified

Sex	Weight	"Myself"		"Overweight people"		"Obese people"		"Slender people"	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Males[a]	Normal	2.15	0.30	3.02	0.41	3.62	0.14	2.37	0.34
Females[b]	Normal	2.15	0.43	3.20	0.26	3.57	0.40	2.38	0.50
Males[c]	Overwgt.	2.05	0.35	3.07	0.45	3.54	0.62	2.58	0.41
Females[d]	Overwgt.	2.54	0.57	3.24	0.37	3.58	0.34	2.52	0.41

Notes. [a] $n = 8$; [b] $n = 23$; [c] $n = 12$; [d] $n = 21$.

Weight loss outcomes at the end of group treatment were available for 14 of the 15 clinic overweight clients from whom semantic differential ratings of "overweight people", "slender people", and "myself" were obtained at the start of treatment. For seven of these clinic overweight clients, follow-up data two to four years later were also available. Spearman's rho non-parametric correlations showed that although internalization of the overweight stereotype bias was not significantly associated with weight loss during treatment (rho = 0.266, p = 0.358, 2-tailed test), it was significantly positively correlated with continued weight loss at follow-up (rho = 0.929, p = 0.003, 2-tailed test).

Finally, reanalysis of these semantic differential data was done using Grice's (2011) Observation Oriented Modeling (OOM). However, these OOM non-parametric analyses revealed that only 117 of 233 observations of the negative body image effect (50.21%) from the first student sample could be correctly classified based on conforming to the hypothesized cause of the self-trait ratings ("myself"), yielding a "c" (chance) value of 0.11, which is likely no greater than chance. Crossing gender with self-trait ratings did not improve the percent of negative body image correctly classified. Discrepancy analyses of the internalized negative trait ratings (i.e., "myself"—"overweight people" ratings) correctly classified only 48 of 233 (20.43%) observations for negative self image (c-value of 0.76), and "thin bias" trait ratings ("myself"—"slender people" ratings) correctly classified 84 of 233 observations (36.05%) for negative self-image (c-value of 0.04). Crossing gender with these discrepancy score internalized negative trait ratings or thin bias ratings did not improve the percent correctly classified. Similarly, OOM re-analyses for the third sample (n = 64) produced a correct classification of just 56.25% (29 out of 64 cases) of the negative body self-image effect based on conforming to the hypothesized cause of the self-trait ratings ("myself")(c-value of 0.11), and the discrepancy analyses (i.e., "overweight internalized bias", or "myself" —"overweight people"; "obese internalized bias", or "myself" —"obese people"; "thin bias", or "myself"—"slender people") yielded correct classification percentages of less than 32%. Crossing gender or overweight percentage with these discrepancy scores did not improve the correct classification percentages.

Discussion

In these samples, college students of varying body weights consistently attributed more socially undesirable personality trait characteristics to "overweight people" and "obese people" relative to "slender people" and "myself". More important, there was no relationship between the negative stereotypic attributions for overweight and self-attributions on the same bipolar adjective scales. Scores on the concept "myself" were as favorable for the overweight students as for their normal weight peers. These findings, in part originally reported by Doell and Hawkins (1981), are consistent with the results of Carels et al. (2013) in his small sample of 68 obese clients seeking weight loss treatment.

Also consistent with the findings of Carels et al. (2013), overweight college females participating in a weight control program did not self-attribute more of the trait terms of the overweight negative stereotype (i.e., internalized weight bias traits), relative to equivalently overweight college women not in treatment. Women seeking assistance for weight loss described their personality characteristics as positively as did the other subjects in these samples. However, examination of weight loss outcomes for seven clinic treated clients showed that continued weight loss during follow-up was significantly positively correlated with internalization of the overweight negative personality bias. This finding supports Carels et al.'s (2013) claim that internalizing the negative personality traits of the obese stereotype may predict outcomes in weight loss treatment, but the

direction of the effect was opposite to their prediction. Implications of the clinical sample's more negative evaluations of "overweight people" and more positive attributions about "slender people" requires further research.

An important caveat is that when these data were reanalyzed using Grice's (2011) "Observation Oriented Modeling", negative body self-image as an effect could be correctly classified based on conforming to the hypothesized cause of the negative self-trait ratings for only about 50% of the cases. Additional OOM analyses examining weight bias, internalized weight bias, and thin bias yielded even lower correct classification rates. In conclusion, unless Carels et al. (2013) or other researchers can show that these effects are robust at the person level of analysis (i.e., that internalization of the obese negative personality stereotype predicts weight loss through treatment and its maintenance at follow-up), which is the goal of predicting outcomes in bariatric behavioral medicine, we will need to remain cautious about making these claims.

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