
Well Played

The Origins and Future of Playfulness

●
GWEN GORDON

In this article, the author synthesizes research from several disciplines to shed light on play's central role in healthy development. Gordon builds on research in attachment theory that correlates secure attachment in infancy with adult well-being to demonstrate how playfulness might be a lifelong outcome of secure attachment and a primary factor in well-being. She discusses infants enacting the two primary attachment behaviors, attachment and exploration, as protosocial and exploratory play, then shows how these form a foundation for lifelong play and development. She reviews several metaphors for world views that arise from different attachment styles and endure throughout life in ways she claims either enhance or inhibit playfulness. She explores the notion that adults can earn secure attachment through attuned play and restore what she sees as their innate playfulness and well-being. **Key words:** attachment theory; attuned play; broadening-and-building theory; exploratory play; happiness set point; internal working models (IWM); playfulness and well-being;

EVEN THOUGH SCHOLARS first began taking play seriously nearly a century ago, the majority of scientists studying health and well-being have largely ignored the field. Because the study of well-being encompasses the social, economic, psychological, spiritual, and physical state (in other words, the overall condition of an individual or group), the absence of play is a serious omission.

This omission becomes even more striking when we consider how much careful research exists establishing the many and varied benefits of play. Natural scientists have identified numerous adaptive advantages for play that include training for the unexpected (Spinka, Newberry, and Bekoff 2001), skills for cooperation (Spinka et al. 2001), and the ability to interpret ambiguous social cues (Pellis 2010; Spinka et al. 2001). In addition, social scientists have identified a host of affective, cognitive, social, and motor capacities that accompany play, including the ability to find meaning in experiences, or meaning making (Bruner 1990); metacommunication, or communication about communication

(Bateson 1976); affect-regulation, or emotional stability (Berk, Mann, and Ogan 2006; Vygotsky 1986); self-transformation, or flexible identity and the ability to pretend (Garvey 1977; Schwartzman 1978); symbolic representation (Piaget 1962); the ability to communicate coherent narratives (Nicolopoulou 2005); the ability to be a peaceful, productive member of community (Sutton-Smith 1997); the social competence it takes to get along with others (Connolly and Doyle 1984); divergent thinking (Baer 1993); the ability to express oneself creatively (Singer and Singer 1998); and even the origin of culture itself (Huizinga 1955; Winnicott 1972).

Yet, despite these impressive credentials, play remains on the margins of the broader professional discourse about health and well-being and, as a result, has remained widely unappreciated, drastically underfunded, and tragically underprioritized. There are many reasons for this situation. Although Western science has been studying well-being since Aristotle first reflected on “the good life” over twenty-five hundred years ago, the topic of play emerged as a serious focus of study only in the last century (Huizinga 1955). As ubiquitous as play is, it remains notoriously difficult to define and although an effective working definition for play behavior does exist (Burghardt 2001, 2005, 2010b), it has yet to be applied very broadly. Because there are so many varied forms of play, it is also difficult to isolate play as a discrete activity with specific and measurable outcomes. For example, while physical activity, social interaction, and creativity can all be aspects of play, they can also be studied separately and not necessarily under the rubric of play. Hence, we can easily miss the significance of play.

In an attempt to bring an understanding and appreciation of play’s contribution to well-being to the front of play science and more fully into the discourse on well-being itself, I seek, in this article, to synthesize and build on well-established research on well-being from several disciplines. The field of positive psychology, which studies positive, adaptive, creative, and emotionally fulfilling aspects of human behavior, serves as my point of departure. This approach leads into a developmental inquiry about the origins of happiness and well-being framed by “attachment theory,” a theory of human development based on the quality of the bond between child and care giver. The field of neuroscience provides further insights, and this synthesis with attachment theory might not only help reveal the central role of play in healthy development but also highlight distinctions within the conception of play that enable us to integrate it even more fully with an enriched understanding of well-being. Insights into play’s critical role in the earliest years of development might, in turn, show

how play supports human development not only up to but through adulthood. By situating play more prominently within the discourse on well-being, I hope to bolster the case for supporting play research, prioritizing it in schools, and promoting policies and education that supports healthy attachment.

Well-being

Ever since Aristotle and Plato first sought to define “the good life,” a full appreciation of well-being has been the Holy Grail for philosophers and scientists alike; and, ever since, well-being research has also been pursued along several different lines. Broadly speaking, scientists and philosophers suggest happiness has two primary aspects: *hedonia* and *eudaimonia*. Aristotle used the term *eudaimonia* to describe the highest of all human good and the realization of one’s true potential. On the other hand, *hedonia*, a term Epicurus used, corresponds to the contemporary interest in happiness, positive affect, and feeling good. Contemporary psychologists generally refer to these two conceptions of well-being as pleasure and meaning respectively. Current conceptualizations of well-being typically fall within these two categories.

Researchers in the field also tend to diverge in their approach (empirical vs. theoretical), measures (objective vs. subjective), and definition (the prevalence of positive attributes vs. the absence of negative conditions). Despite these divisions, however, some notable areas of consensus emerge. Researchers widely agree that well-being encompasses social, mental, and emotional health (Statham and Chase 2010) and that the single most important factor responsible for well-being is the presence of supportive relationships (Berscheid 2003). In fact, numerous studies indicate that virtually every measure of health is improved by access to close social relationships and rich social networks (Beals, Peplau, and Gable 2009; Cohen and Janicki-Deverts 2009; Gallagher and Vella-Brodrick 2008; Holt-Lunstad, Smith, and Layton 2010; Simpson et al. 2003). Simply put, according to research in several disciplines, the quality of individuals’ lives depends on their relationships. Social disconnection and isolation for individuals of all ages marks one of the biggest stressors causing pathology and disease (Schoore 1994; Siegel 2010).

In addition, researchers generally agree a predisposition for happiness plays a critical role in well-being (Keyes, Shmotkin, and Ryff 2002). Psychologists studying positive emotions have observed that individuals maintain a relatively

stable degree of happiness throughout life, reverting to that state even after experiencing powerful emotional events like winning the lottery or losing a loved one. These positive psychologists call this emotional baseline the “happiness set point” (Diener 2000; Lykken 1999).

Research shows that the happiness set point is one of the strongest predictors of not just well-being but of overall success (Diener and Diener 1996, Lyubormirsky, King, and Diener 2005). This is partly the case because a high happiness set point (chronic happiness) is a cause and an effect of numerous other conditions that contribute to well-being and, so most believe, indicate success. These conditions include marriage, financial security, satisfying work, and a particularly strong network of supportive relationships. Research shows that strong social bonds and chronic happiness consistently correspond to key factors in social, emotional, and mental health.

If social relationships are the primary key to well-being and a high happiness set point confers social advantages, it would seem that the set point is the primary determinant of happiness. If the set point is so critical to well-being, we might very well wonder: what causes a high happiness set point? And, more importantly, how can we get one? Based on studies with twins, scientists have concluded that variations between individuals result from a combination of genetic endowment and personality predispositions affected only slightly by an individual’s social environments (Lykken 1999). Science writer Matt Ridley (2003) sums up this interaction as “nature via nurture.” From this perspective, individuals seem to be born with their set point, which can be nourished or diminished by life experience, especially by traumas.

But without the intervention of extreme circumstances, can it be that temperament is really destiny? In the last ten years, neuroscientists have begun to tell us no. Their conclusion rests on insights into the basic knowledge of brain structure and function that has vastly expanded in the last decade due largely to breakthroughs in brain-imaging technologies. The incorporation of neuroscience into the developmental sciences now enables more complex and heuristic models of human development that have moved beyond the simple dichotomies commonly posed between attitude, experience, and biology to enable us to understand how all factors interact. These developments have revealed that genetic potential does not exist in a vacuum; it unfolds through experience (Kandel 1998; Post and Weiss 1997).

One of the most significant findings of the last decade of developmental neuroscience research suggests that the infant brain “is designed to be molded

by the environment it encounters” (Thomas et al. 1997, 209). This environment is intensely social and defined by the interactions between the infant and her primary care givers (Schoore 1994, 1999). The experiences that play the biggest role in shaping an infant’s growing brain involve the primary care giver in the first years of life.

Whatever potential we may have when we come into the world, the socio-emotional environment of our earliest relationships forms the soil in which this potential either blossoms or withers. But while the quality of this soil may be critical, research now shows that no matter how inhospitable the environment might be, these conditions do not constitute a life sentence. Even if a child does not grow up in an enriched environment that leads to optimal development, we have many reasons to be hopeful. We now know that the brain never stops growing. It remains plastic, open to change in response to experience, throughout life (Barbas 1995; Benes 1998). The brain’s neuroplasticity means we can change our minds, change even those qualities previously considered to be inborn personality traits. So whatever we bring into the world from the womb, the means of adult happiness may ultimately remain in our hands.

Yet, as encouraging as these findings might be, they in no way decrease the importance of the first years of life in establishing patterns of neuronal growth that shape the mind and become the foundation of the self. Play research has also benefitted from brain-imaging technologies and has begun to look at the role of play in healthy brain development. Findings from research on rough-and-tumble play in rats strongly suggest that such play in childhood is critical to the development of foundational social skills in children (Panksepp 2007; Pellis 2010). While these findings apply to children old enough for rough-and-tumble play, there is now evidence that play affects healthy development as soon as the infant is born. In this article, I explore connections between a baby’s first play and what positive psychologists regard as the predetermined personality traits most conducive to the good life.

Development

Psychologists since Sigmund Freud have correlated early-childhood experiences with mental health in adulthood; but only in the last half century has play been included as one these formative childhood experiences and a factor in healthy development (Erikson 1963; Piaget 1962; Vygotsky 1986). British psychoanalyst

D. W. Winnicott (1972), in particular, offers a developmental model that not only accounts for developmental differences but also proposes play as the principal agent for shaping these differences.

In the last two decades, attachment theory has built on these insights and become one of the most important conceptual frameworks for understanding the formation of personality and mental health. Though, as originally formulated, the attachment model did not explicitly include play, a closer look reveals that play, in fact, is central to the attachment relationship.

Formulated by the British psychoanalyst John Bowlby in his seminal book *Attachment and Loss* (1982), attachment theory proposes that because of a child's dependence on others, an infant is born genetically programmed to seek proximity to its attachment figures (Bowlby 1973, 1980, 1982; Cassidy and Shaver 1999). This is because, in addition to basic needs for food, warmth, and protection in the first year of life, an infant relies on his primary care giver for the development of functional capacities for social engagement, internal regulation, and coping with stressors, especially those from the social environment. In an infant's first year, the attachment experience provides the foundation for the construction of the nervous system, which lays the wiring for a child's responsiveness throughout life (Kehoe et al. 1996).

The First Year—Attuned Play

From the moment of an infant's birth, she reaches out to engage with her environment. For the first eight weeks, these interactions consist of simple movements, smell, taste, and touch. By the second month, however, a milestone of development occurs in a baby's visual cortex, making eye contact possible (Yamada et al. 1997, 2000). With eye contact a child can register and respond to facial expressions, opening up a whole range of emotions an infant and her mother communicate to each other. "Goo-goos" and "ga-gas" ensue as a call-and-response love song that often erupts into cascades of giggles.

While we might think of these intimate exchanges as merely delightful, as ultimately frivolous byproducts of the mother-child bond, in reality they prove the essence of attachment and a cornerstone for healthy development. Through eye contact, attuned facial expressions, and melodic vocal tones, a mother and her child's emotions become synchronized in waves of calm and excitement. Through these rhythms of stimulation and soothing, activation and deactiva-

tion, a baby learns to regulate her emotions, trust her environment, develop her capacity for social engagement, and cultivate the strategies for coping with novelty and stress inherent in human interactions and life (Schore 2001).

Whereas Bowlby originally understood affect regulation—the ability to monitor, evaluate, and modify emotional reactions—to include only the reduction of emotional intensity through calming and soothing, research now indicates that affect regulation also involves intensifications of positive emotion and that this excitation becomes a condition necessary for more complex neurological self-organization (Schore 1994). So, while soothing is essential and helps an infant regulate responses to stressful states, stimulation is equally important. When an infant is happy, all the reward circuits in the brain light up (Mobbs et al. 2003). These reward circuits release pleasurable neurotransmitters like dopamine, which facilitate the establishment and consolidation of new neuronal pathways. A growing amount of research indicates that dopamine has a direct effect on the development of creativity and memory (Inzelberg 2013; Sawaguch and Goldman-Rakic 1991, De Dreu, Baas, and Nijstad 2008; Ashby, Isen, and Turken 1999).

Freedom to play without inhibition or constriction is a key ingredient for joy, interest, passion, and vitality later in life. (Marks-Tarlow 2012; Fredrickson 2001; Panksepp 2004). As psychologist Alan Schore put it, play creates a “positively-charged curiosity that fuels the burgeoning self’s exploration of novel socio-emotional and physical environments” (Schore 1994, 50). In other words, the pleasure engendered by attuned play in the first year of life provides a foundation for life to be joyful (Schore 1994) while fostering a natural drive for more play and the impulse to explore.

The Second Year—Exploratory Play

Bowlby tells us that, with adequate attachment security, by the second year of life, a baby’s innate drive to interact with his environment starts to extend beyond his mother. An infant starts to leave the safety of his mother to explore new objects and people. Bowlby proposed that exploration behavior is part of an interlocking system with attachment behavior, elicited by novel or complex stimuli. It begins when a youngster orients himself to new features of the environment, whether they are activities, objects, or individuals. A toddler then moves toward the new stimuli and engages it. By manipulating unfamiliar objects and interacting

with strangers, a toddler develops new somatosensory awareness as well as new cognitive abilities and categories (Bowlby 1982; Gibson 1988). This exploratory play is the basis for learning, goal pursuit, and growth (Feeney 2004; Feeney and Thrush 2010).

Yet, as essential as exploration is to a child's development, an infant's attachment needs are primary. Without a mother's supportive presence, an infant cannot internalize a secure base from which to explore the world. Healthy exploration occurs to the extent that a mother is available when needed and the attachment bond is secure. The varying degrees of attachment security that infants experience and the resulting differences in exploratory behavior reveal the first signs of developmental differences among individuals. Researchers have found that these differences fall into four categories based on the degree of attachment security: secure attachment, avoidant attachment, anxious or ambivalent attachment, and disorganized attachment (Ainsworth et al. 1978; Main and Solomon 1986). Understanding these attachment styles reveals the importance of attuned play as the cornerstone for healthy attachment and the basis for exploratory play.

A secure style develops when a care giver remains consistently available, affectionate, and responsive, resulting in a more trusting and sociable child. Securely attached babies feel confident to explore the world. They display a balance of attachment and exploratory behaviors appropriate to the circumstances.

An anxious-ambivalent style develops when a care giver fails to be consistently available, resulting in a more anxious, insecure, and clinging child. Anxiously attached infants become preoccupied with their mothers' availability, which inhibits or precludes exploration (Ainsworth et al. 1978; Bartholomew and Horowitz 1991).

An avoidant style develops when a care giver becomes either cool and unresponsive or overtly hostile, resulting in a child who is more emotionally distant, independent, and cautious about expressing affection. Avoidant-attached babies engage in exploratory behaviors at the expense of attachment behaviors, but their exploration is devoid of the joy and interest inherent in nonanxious exploration (Ainsworth et al. 1978). These infants show sustained elevated heart rates during exploration, indicating that they are experiencing stress caused by the lack of attachment security (Sroufe and Waters 1977).

A disorganized or dissociated style develops when a care giver becomes violent toward the youngster, placing the child in a situation of being dependent on the very person who is threatening his life. Disorganized-attached infants

do not know how to react to their care givers. They may occasionally resist attachment figures or become confused or frightened by them. Overall, they have difficulty functioning in an organized, coherent manner, and their ability to explore is severely crippled (Carlson 1998; Liotti 1992; Main and Morgan 1996; Ogawa et al. 1997).

Research on developmental trauma provides a deeper understanding of how complex neurochemistry, which relies on specific developmental timetables, becomes derailed depending on the attachment experience (Schore 1994). Findings from longitudinal attachment studies have shown that when infants satisfy the developmental need for attachment security, they enjoy many significant lifelong benefits including emotional flexibility, social functioning, and cognitive skill. Some studies suggest that secure attachment also promotes resiliency (Schore 1994), while insecure attachment causes emotional rigidity resulting in serious lifelong mental- and physical-health problems (Cassidy and Shaver 1999) including a tendency toward social disfunction, attention impairments, reduced empathy, trouble understanding the minds of others, and a lack of coping skills (Liu et al. 1997; Rosenblum et al. 1994).

Researchers have found evidence that attachment histories have an impact on adult exploratory behavior. Adults with a secure attachment history show an increased appetite for exploration relative to insecurely attached peers. Because securely attached individuals have more curiosity (Aspelmeier and Kerns 2003; Mikulincer 1997), their explorations take varied forms including thrill seeking (Carnelley and Ruscher 2000) and social, environmental, and intellectual adventuring (Green and Campbell 2000). They also exhibit cognitive openness (Mikulincer 1997; Mikulincer and Arad 1999), and what some researchers call overall approach behavior (the movement toward something) (Elliot and Reis 2003).

Researchers found that adults with insecure attachment styles display a significantly lower propensity for exploration-related activities, and these activities take on distinct characteristics depending on the individual's attachment style. As we might expect, anxious attachment correlates highly with reduced environmental exploration. These individuals report needing close contact with and support from others before they will engage in exploration (Martin, Paetzold, and Rholes 2010). Avoidant attachment correlates with reduced social exploration. These individuals report that they explore in part to maintain freedom from others (Rholes, Paetzold, and Friedman 2008). Secure attachment allows

adults to engage in greater social, intellectual, and environmental exploration overall (Green and Campbell 2000). In other words, attuned social play in the first year of life encourages exploratory play throughout adulthood.

Play and Development

Knowing that attuned play makes exploratory play possible, we can better understand how infant play helps develop the brain function that leads to increasingly complex play. By removing the neocortices (the more complex, later-to-develop center for language and higher cognition) of rats and studying their play behavior (Panksepp 1998), scientists have found that complex forms of play have their roots in the more primitive brain centers. The rats without neocortices, it turned out, played more exuberantly than those whose neocortices and cognitive functions remained intact. While play has nonverbal, affective roots and does not require cognition, eventually, it makes very good use of cognition throughout life.

The renowned Swiss psychologist Jean Piaget provides us with an enduring model of how play builds on its subcortical roots, increasing in complexity as a child develops. Briefly, in Piaget's model an infant starts with early sensory-motor play leading to mastery play, symbolic play, and, finally, to games with rules. These stages reflect increasing complexity as the neocortex and left brain bring competencies of language, logic, narrative, and conceptual self-awareness to the right-brain foundation of affective processes and embodied self-awareness set in place by the early attachment system built on the primal subcortical roots of play.

British psychologist Sara Smilansky (1990) builds on Piaget's models to show how play continues to develop beyond the individual realm into social realms. According to Smilansky, exploratory play leads to constructive play, a more active somatically based engagement with the world. This leads, in turn, to sociodramatic play, a more complex form of dramatic play with implicit rules and multiple players organized around a common play theme; to games with rules, the most highly organized form of cooperative play, characterized by explicitly defined rules. (Marks-Tarlow 2012). According to Smilansky's model, social connection is primary to the life and play of a developing child. This connection, starting with attuned play, enables the child to develop autonomy first expressed in exploratory play and then to move back toward social connection with a greater level of complexity.

Two Branches of Play

In this model, attuned and exploratory play are prototypical of primary, irreducible play categories that extend throughout life and that characterize animals who rely on attachment bonds for their development.

Attachment theory points to human development beginning with two irreducible forms of play: attuned and exploratory. Play theorists, however, generally group play into three irreducible categories: solitary locomotor-rotational play, object play, and social play (Fagen 1981). Briefly, solitary play is primarily kinesthetic and takes place alone; object play can be social or solitary (Tanner and Byrne 2010) and involves the manipulation of inanimate objects; and social play involves two or more players (Burghardt and Lewis Graham 2010).

How, then, do these three play categories map onto the two categories of attuned and exploratory play provided by the attachment framework? It is both simpler and more complicated than it appears. Attuned play might seem the quintessential example of social play. But social play requires a self and an “other.” Since attuned play occurs before the infant forms an identity or a sense of an other, attuned play may be more accurately described as protosocial play. Object play maps easily onto exploratory play, which can be social, solitary, or object play. Sensory locomotor play might be considered the aspect of exploratory play that explores physical sensations associated with different movements. But because we find sensory locomotor play in animals that do not depend on attachment and also at the beginning of Piaget’s developmental trajectory for children, we might see it as the most primitive, subcortical expression of the play impulse that prefigures the attachment relationship altogether.

So perhaps we should consider attuned play the protosocial play, one that leads to myriad forms of more complex social play including rough-and-tumble play, joking, mimetic play, agonistic play, social games, team sports, contests, festivals, celebrations, and ritual. We might also consider the first steps of a toddler’s exploratory play to be the protoexploration that leads to increasing complexity in physical expression (sports, dance, and similar activities), the arts and sciences, adventure, performance, experimentation, hobbies, risky or deep play, vertiginous play, games of chance, and personal growth as a whole, or the “play of the self” (Callois 1961, Sutton-Smith 1997).

Just as attachment and exploratory behavior are interlocking systems in attachment theory (with attachment as primary), attuned play factors primarily in making exploratory play possible. Positive psychologist Barbara Frederickson

(1998) explores the dynamic through which the positive emotion that arises from attuned play activates and enhances exploratory play in the broaden and build theory. She observes how positive emotions create feedback that helps individuals broaden their experiences and build their repertoires of behavior. Indeed, broadening and building is central to exploratory play, which engenders novel and varied thoughts and actions in what Fredrickson called an upward spiral toward increasing well-being (Fredrickson and Joiner 2002). While the emotion of joy has often been considered a result of play (Fredrickson 2001; Panksepp 2004), attuned play also produces a sense of love, interest, contentment, enjoyment, and curiosity. Such positive emotions engender in turn a sense of safety and interest, which is a condition for exploratory play (Fredrickson 2001).

I should note that, during the first two years of life, play is essential but not adequate for healthy development. As the brain continues to develop, play remains necessary but not sufficient to nourish healthy neuronal growth. Studies of animals extrapolated to humans show that rough-and-tumble play, in particular, serves a critical role in the development of social skills (Panksepp 2004; Pellis and Pellis 2010). But all play experiences subsequent to the attuned play of the attachment relationship reflect the patterns of this early conditioning, in part because these patterns establish the child's cognitive models for future interactions. Cognitive models—the way we learn to see the world—are the critical bridge for understanding how attachment styles translate into lifelong predispositions and behavioral patterns.

Internal Working Models

The attachment patterns established in the first year of life turn into a kind of cognitive “schema” that becomes neurologically “set” in the brain during the first three years of life. If the schema finds enough reinforcement, it turns into what Bowlby (1982) called a child's internal working model. An internal working model (IWM) is a generalization a child makes about the world that becomes the unconscious interpretive filters through which she sees herself and others.

While Bowlby proposed that internal working models apply only to human relationships, we can easily see how a child might extrapolate from the realm of human relationships to view the larger world through the same lens. For the newborn, the attachment relationship constitutes its total socio-environment, and the larger world becomes an extension of this initial experience of the world.

So a child's IWM, based on the attachment relationship, would likely condition its unconscious attitude about life as a whole.

Echoing this idea, Winnicott describes what he called the potential space between subject and object—which a baby first experiences with a mother—as expanding outward into ever-widening spheres. It builds continuity between infancy and adulthood, between early attachment security and later “creative living,” and between the action of individuals and the state of society as a whole. Although Winnicott's potential space and the socio-environment of the attachment relationship may not correlate exactly, both define an infant's entire reality, informing the basic features of the cognitive map she then uses to navigate the wider world.

Spaces Between Mother and Infant

To describe the first potential space between mother and infant, Winnicott (1971) uses the metaphor of a playground because the primary activity between mother and child is play. He writes: “In the state of confidence that grows up when a mother is able to do this difficult thing well (not if she is unable to do it), the baby begins to enjoy experiences based on a ‘marriage’ of the omnipotence of intrapsychic processes with the baby's control of the actual. Confidence in the mother makes an intermediate *playground* here, where the idea of magic originates, since the baby does to some extent experience omnipotence. . . . I call this a playground because play starts here. The playground is the potential space between mother and the baby or joining mother and baby” (47).

In a healthy attachment relationship, this space indeed forms a playground, but not every child enjoys this optimal situation. Less securely attached individuals do not experience the potential space as hospitable to play. Instead of having an internal working model of the world as a playground, less securely attached children see the world as more troublesome—their working models might be characterized by different metaphors. Indeed, I introduce some metaphors to convey a more vivid sense of the way each attachment style views and engages the world.

WORLD AS PLAYGROUND. Securely attached children expect the world to be friendly and adventures to be enriching. They have a basic sense that the world is safe, which makes play possible. For these children, ambiguity and uncertainty present excitement and stimulate exploration. They view strangers as potential playmates and new environments as potential playgrounds.

WORLD AS PROVING GROUND. Anxiously attached children expect the

world to provide only conditional and inconsistent support. This insecurity causes anxiously attached children to feel they have to work to earn approval or to defend against the need for it, or both. These children, not trusting themselves, need to test others and the world continually in an attempt to discover who (and what) is trustworthy. Ambiguity and uncertainty threaten them and stimulate their need for control. Strangers also pose a threat as arbiters of value to be won over or as potential competitors for approval. These children might be driven by a need for societal approval and strive to meet cultural standards for success that do not ultimately provide happiness.

WORLD AS BATTLEGROUND. Avoidantly attached children expect the world to be either hostile or indifferent. To these children, the world feels unwelcoming and unsafe. Ambiguity and uncertainty elicit from them either a phobic or counterphobic response and prove a source of great stress. The high degree of autonomy such children need prevents them from experiencing support from others or the world. They retreat into small environments over which they can feel some control.

WORLD AS PRISON. Disorganized attached children who view the world as a prison face a life of difficulty. Because the world represents a perpetual threat to them, the only way they can handle the life-or-death terror of existence itself is either to dissociate from it or to react in eruptions of violence. In a prison, all situations are ambiguous and uncertain, and the sense of pervasive threat stimulates a disorganized fight, flight, or freeze response. These children avoid other people because they are a constant threat.

Within each world view, exposure to ambiguous and uncertain situations solicits specific predictable response patterns. These responses, in turn, tend to solicit predictable responses from the environment. For example, if someone expects a stranger to be friendly, she is likely to approach the stranger in a friendly manner, soliciting a friendly response. On the other hand, if she sees a stranger as a threat, she might behave defensively and provoke a hostile response, turning potentially positive situations into threatening ones. A child's world view can be a self-fulfilling prophecy, creating tenaciously reinforcing feedback loops with strong repercussions for long-term well-being. Those who perceive the world as a playground have good reason to feel safe. They tend to solicit a positive, supportive response from others. In addition, seeing the world as a playground does not lead a child to be overly trusting or unrealistically optimistic. Instead, it enables a child to read subtle cues about intention accurately and to sense real danger signals (Fonagy et al. 2002). It also gives a child the resources

to respond to and recover from dangerous situations when they occur. Recent research confirms that when children approach an ambiguous activity—one that is not obviously playful—as an opportunity to play, they show more signs of emotional well-being than when they approach the same activity as not an opportunity to play (Howard and McInnes 2012).

Because IWMs are formed before a baby develops conscious, explicit memory functions, they remain implicit and unconscious. Children do not see their own internal working models. They simply see the world through them. They might layer other attitudes or perspectives on top of these views and influence their behavior, but under stress, the internal working models will exert the strongest influence.

Researchers have proposed two models that make different predictions about the long-term continuity of these cognitive models. One model assumes that new experiences update, revise, and eventually replace existing representations. The second model makes the assumption that internal working models are preserved (i.e., they are not overwritten) and these models continue to influence behavior throughout the life-span. Neither model has been empirically proven (Fralely 2002). However, with an appreciation of the brain's neuroplasticity—its ability to change continually in response to new behaviors, environments, or neural processes—and with the compelling empirical evidence of the benefits of attachment-based clinical therapies (Johnson 2008; Tatkin 2011), we might deduce that internal working models do change with experience and can be altered.

Because I suggest in this article that playfulness is not a personality trait or a temporary state, but a characteristic of healthy development and well-being, I propose that the lucky child might have a chance to develop into a playful adult regardless of her personality. As I explore in the next section, scholarly literature shows strong correlations between characteristics of playfulness and qualities like flexibility, spontaneity, and sociability that develop from secure attachment (Lieberman 1965, 1966, 1977; Barnett and Kleiber 1982, 1984). We might then deduce that secure attachment helps determine the happiness set point and degree of sociability so critical to our well-being (Fredrickson 2001).

Even so, I should emphasize that secure attachment does not guarantee lifelong playfulness or well-being. The vicissitudes of life continue to shape personal development, and traumas that occur later in life can diminish the security generated in the first few years of a child's life. In addition, attuned

play is a necessary but not sufficient condition of secure attachment and subsequent playfulness. If a mother does not also provide reliable soothing, no amount of play will provide a child with the sense of security needed for a lifetime of play.

Playfulness

While playfulness is as old as play, scientific inquiry about it is relatively new. Most scholars agree that playfulness (like the happiness set point) is a personality predisposition that makes the individual more likely to engage a situation or environment to make it more enjoyable or entertaining (Barnett 1990 2007; Glynn and Webster 1992; Schaefer 1993; Trevas et al. 2003).

Most research on playfulness focuses on children. Play researchers generally conceptualize playful children as having five personality traits: physical spontaneity, cognitive spontaneity, social spontaneity, sense of humor, and manifest joy (Lieberman 1965, 1966, 1977; Barnett and Kleiber 1982, 1984). Glynn and Webster (1992) uncovered five similar features that constitute adult playfulness. According to them, playful adults are spontaneous, expressive, fun, creative, and silly. The similarity in playfulness factors for children and adults suggests that playfulness remains, in many ways, consistent across age.

According to the literature, playfulness correlates with a number of psychological and physiological benefits, including nonlinear, divergent thinking, problem solving, physical activity, emotional regulation, and imagination (Barnett 1985, 1991; Barnett and Kleiber 1982; Brockman, Jago, and Fox 2011; Christiano and Russ 1996; Elias and Berk 2002; Lieberman 1965, 1977; Singer, Singer, and Sherrod 1980; Vandenberg 1980). The benefits of playfulness in adults overlaps in many ways with those for children, including enhanced creativity, humor, motivation, and positive affect (Amabile et al. 1994; Barnett 2007, 2011–2012; Glynn and Webster 1992, 1993; Guitard, Ferland, and Dutil 2005; Peterson and Seligman 2004; Tegano 1990). In addition, playfulness predicts numerous health benefits in both children and adults. Research shows that playful adults live an average of ten years longer than their less playful peers (Diener and Chan 2011; Lindstrom et al. 2005; Singh-Manoux, Richards, and Marmot 2003; Son et al. 2007).

Perhaps most significant of the benefits conferred by a playful approach to life is its relationship to stress reduction and coping strategies in adults (Barnett and Magnuson 2011; Hutchinson et al. 2007). Research has found extraversion,

or outgoing, sociable tendencies, significantly predicts playfulness in adults (Barnett 2011–2012) and extraverted individuals report substantially lower levels of perceived stress (Barnett 2007; Burgess, Irvine, and Wallmahmed 2010; Ebstrup et al. 2011). Recent research also shows a more direct correlation between playfulness and stress reduction in that playful people find fewer situations stressful and more readily use the coping strategies they have than less playful people (Magnuson 2011).

We can see how these benefits might result from the strong correlation between playfulness and a high happiness set point and strong networks of social support—the two key ingredients for well-being identified by positive psychologists.

What, then, causes playfulness? While some researchers regard playfulness as a temporary state of mind, much of the recent research focuses on empirically testing the claim that playfulness is a personality trait that is stable across time (Webster and Martocchio 1992; Yager et al. 1997). These findings offer little discussion about what might be done to cultivate or restore playfulness. According to this perspective, one would have to be born with a playful personality to enjoy the enormous advantages it confers.

A Playful Species

The possibility that playfulness might instead be the normal result of healthy development and not a stroke of temperamental good fortune correlates with the notion that humans are, after all, *Homo ludens*, an inherently playful species. The cultural historian Johan Huizinga (1955) coined this phrase after observing that play constitutes the primary formative element in human culture. That humans remain playful through the life-span, thereby creating elaborate cultures, ingenious inventions, and exquisite artistic expressions, might indicate that playfulness is not the special distinction of a lucky few but every human's birthright. Humans are a uniquely playful species, and our playfulness has provided enormous evolutionary advantages at the species level making us more adaptable, flexible, and inventive. In spite of our relatively weak physical stature, humans have become the dominant species on the planet due in large part to our playfulness. It is not surprising then, that playfulness would be just as advantageous at the personal level. Many evolutionary biologists believe that our playfulness is the result of the evolutionary feature called neoteny, the slowing of development

that extends childhood traits through adulthood (Gould 1977; Montagu 1981).

These scientists claim that for the same reason that we are born helpless and remain hairless (for the most part) our whole life, we can also retain the playfulness of childhood. Thus, healthy adults are individuals who live up to their species' potential by retaining the childhood qualities of "open-mindedness, receptivity to new ideas, malleability, questing, striving, questioning, seeking, critical testing and weighing of new ideas as well as old ones: wide-eyed curiosity and excitement in the enjoyment of new experiences, the willingness to work hard, together with a sense of humor and laughter" (Montagu 1981, 70). Being unplayful (i.e., humorless, morose, or perpetually grave) is not a sign of maturity, it is a symptom of what the British anthropologist Ashley Montagu called "psychosclerosis," the hardening of the psyche. Montague argues that retaining a flexible psyche and playful qualities represents healthy development.

In contrast to constructs of playfulness as a personality trait or a temporary attitude or approach, we might consider it our original design. Winnicott associated playfulness with the notion of a True Self, a sense of self based on spontaneous authentic experience, a sense of "all-out personal aliveness" or "feeling real." In contrast, he saw the False Self as a way of presenting a "polite and mannered attitude" in public but which could lead to a sense of feeling "empty, dead, or phony" (Winnicott 1965). According to Winnicott, the False Self is necessary to healthy social functioning at a fairly superficial level, but the more extreme False Self was a defense against an environment that felt unsafe or overwhelming because of a lack of reasonably attuned care giving during infancy. For Winnicott, the True Self is the creative self, which is playful and which develops only through adequate holding and attunement in infancy. We might then see this playful True Self to be our original design, the potential for a neotenous species and a state of optimal functioning both made possible through play and an expression of playfulness.

Most important for the future of our well-being, however, is the insight that even if an individual did not benefit from the conditions conducive to the fulfillment of her playful potential, she is not condemned to live a diminished, fear-based life in a proving ground, battleground, or prison. In the same way that genes interact with experience in the first years of life to foster playfulness, the possibility of restoring and cultivating playfulness is also a function of experience. Thus, we can stay true to our original design, restore our True Self, and develop a sense of playfulness in spite of developmental traumas. And one of the keys might very well be more play.

Cultivating Playfulness

One of the gifts of neoteny is the brain's lifelong synaptic plasticity. This means that while the brain is shaped by experience, it can also be reshaped by experience. When neurons fire together, they form new neural networks; in other words "neurons that fire together wire together" (Hebb 1961). Therefore, we can change our set points and behavioral grooves simply by repeating experiences. Interestingly, the very neuroplasticity that enables us to recover from developmental traumas is itself a product of play—since play is known to produce neurotrophins, such as brain derived neurotrophic factor (BDNF). These are molecules that support neuron development, survival, and neuroplasticity (Hua and Smith 2004; Lauder 1993; Poo 2001). Not only does early play make our neurophysiology more flexible, but continuous play makes our cognitive, emotional, and somatic functioning more flexible.

Restoring Attachment Play

Because a child's inherent playfulness is either fostered or inhibited during the attachment experience in the first year of life, restoring playfulness might require repairing attachment ruptures and healing developmental trauma. One of the most hopeful notes in attachment theory suggests that attachment behaviors are innate and cannot be permanently damaged (Roisman et al. 2003). With the right intervention, even the most insecurely attached individual can restore healthy innate attachment behaviors, "earning" secure attachment and thus potentially unleashing the individual's inherent, in-born playfulness. In other words, "earned secure" attachment (Collins, 2007) can result from therapy. We might assume that the more insecure the child's attachment experience happens to be, the deeper, more deliberate, and extended the reparative process might have to be, bringing us into the domain of clinical therapies. Where, then, does play fit?

According to Winnicott, psychotherapy itself is a highly developed form of "playing in the service of communication with oneself and others" (1972, 41). Winnicott sees the role of the therapist explicitly as to "bring the patient from a state of not being able to play into a state of being able to play" through play itself (1972, 38). As first articulated by the seminal work of Huizinga (1955), play theorists generally agree that, like therapy, play necessarily exists in a specially prescribed space that is separate from ordinary life and free of long-term consequences. Based on our understanding of insecure attachment, we might assume

that—for those with insecure attachment histories—play with clear structure and low consequences is more inviting because such people would perceive this play to be safer than other, unstructured forms of play. Like therapy, play makes it possible to break out of habitual behavior patterns and try something different, opening the door for real growth and learning. Because internal working models can insidiously diminish the sense of possibility for a child, establishing a special space removed from ordinary life with special rules and boundaries might frame it as a world outside the world, a reality in which the internal working model might not apply, making the new perceptions, behaviors, and corrective experiences that contradict the model possible. So we might find that not only are the most effective therapies for healing attachment trauma play based but that some types of play outside of the clinical setting can be effective as well.

Play Therapies

Clinical psychologists working with attachment wounds propose that healing attachment traumas at this level requires “corrective” experiences within an attachment relationship, whether with a therapist or with a romantic partner (Johnson 2002). In this case, establishing safety through intimate empathic attunement is the critical first step.

Therapies for children almost universally incorporate play because the play drive is so strong in children, it can be considered the natural language of childhood. In addition, play activities can accomplish many therapeutic goals (social, emotional, somatosensory) simultaneously while providing the dopamine reward experienced as good fun. Play-based therapies for children with social challenges have yielded remarkable results especially in children on the autism spectrum. For example, researchers have found that parents of children with autism can, by simply joining their children on the floor and playing with them on their own terms, generate measurable improvements in their children’s capacity for social engagement—an approach called floor-play therapy (Casenhiser, Shanker, and Stieben 2012).

Winnicott proposed an even more encompassing notion of play as it relates to therapy, claiming that all therapies are a form of play: “Psychotherapy takes place in the overlap of two areas of playing, that of the patient and that of the therapist. Psychotherapy has to do with two people playing together. The corollary of this is that where playing is not possible, the work done by the therapist is directed towards bringing the patient from a state of not being able to play into a state of being able to play” (1971, 44). Building on Winnicott, psychologist

Terry Marks-Tarlow suggests that play is a “central part of the repertoire for clinical intuition” (Marks-Tarlow 2012) and so is intrinsic to therapies for all ages.

Beyond Winnicott and Marks-Tarlow’s notion of therapy as implicit play, there are numerous, explicit, play-based therapies for adults including expressive arts therapies and drama therapies. Although there is a strong theoretical basis for the hypothesis that safety and established play-based therapies can be as effective with adults as they are with children, I have not yet found approaches that explicitly incorporate restorative, attuned play in attachment-based interventions for adults.

Because the developmental trauma occurred in relation to play at the deep level of the emotion-based Limbic brain, effective therapies at any age might require the same basic approach that engages the primary experience of joy. Neuroscientist Jaak Panksepp (2004) suggests that approaches that attempt to heal the attachment wound using cognitive functions at the level of the neo-cortex only “dampen the psychological pain coming from deep down.” More effective approaches begin with the primary direct experience of joy to amplify our “eagerness to live” (Weintraub 2012). These approaches might necessarily incorporate play since the emotional operating system Panksepp determined in his extensive research in affective neuroscience operates with joy.

The key to play and well-being at any age is a basic sense of safety. As attachment theory illustrates, individuals instinctually play to the extent that they have internalized a secure base from their attachment bond. Safety is equally important for any process of healing and growth. The presence of play signals the fact that safety is present (Marks-Tarlow 2012). Therapeutic play in particular can generate a sense of safety that supports the healing process toward more play. As Porges suggests: “Safety is functionally our transformative state, and neural exercises of this safe state, like play, enable the social engagement system to work. When we feel safe, we have access to neural circuits that enable us to be social and happy and playful. In this framing, play literally becomes a functional therapeutic model that exercises the neural regulation of the face, creating a sense of safety, playfulness, and joy!” (Porges and Buczynski 2011).

This play might both help establish and restore playfulness throughout life. Still, the attuned connection is primary. Play that is not attuned is not only less fun but might even exacerbate attachment insecurity and so inhibit the healing process (Jernberg 1979).

During the attuned play of the attachment relationship, the interactions

between mother and child occur in large part between the nonverbal right brain of each. The right brain is dominant in infants, and right brain structures suffer underdevelopment, damage, or distortion in children with insecure attachment histories (Schore 2003). While play engages many regions of the brain, not all play engages the nonverbal right brain. For play to help heal developmental trauma, it must engage the right brain where the original wounding occurred. As psychologist Alan Schore tells us, the reality of the right brain's world is derived from information about the emotional states of others (Schore 2003). All the signals of emotional attunement are pure nourishment for the right hemisphere both during early development as well as in adult life. Right brain communication consists primarily of touch, facial expression, changes of tone of voice, rhythmic movement of various kinds, and music (Schore 2003).

Therapeutic Play for Adults

I am not aware of any research on the effects of attuned, right-brain dominant play on adults either within or outside the therapeutic setting, but we might hypothesize that any attuned right-brained to right-brained play would have considerable beneficial effects. This kind of play might include activities ranging from dancing to improvisational theater to musical improvisation.

One particular example might be tango dancing, with its heart to heart embrace, rhythms, kinesthetic attunement, and a balance of structure and improvisation to provide safety and personal expression. In fact, research at the International Association of Tango Therapy suggests numerous benefits of its brand of therapy for adults (Trossero 2006). The research indicates that the peculiarity of the tango embrace, which resembles the caring arms of the mother, can be particularly helpful when dealing with trauma. In addition, the subtle caresses and contact in the dance increase oxytocin levels, the pleasurable "love" hormone generated by emotional connection, particularly during childbirth and nursing. This lowers blood pressure and dilates the arteries. These characteristics alone produce a positive mental state, which researchers claim fights anxiety and stress (Peidro and Comasco 2007). Because of these characteristics, tango has been used as adjunct therapy in the treatment of several psychological disorders such as social phobia, depression, and even schizophrenia (Trossero 2006). Generally, dancers have found the tango aids all kinds of relational problems and helps couples and adolescents suffering from addictions or mental disorders. While there is no empirical evidence for tango affecting attachment trauma, it warrants further study.

American neuroscientist Richard Davidson has also made many interesting discoveries about how specified activities have salient neurological effects indicating an increase in well-being. For example, he found that spending ten minutes each day compiling a gratitude list generates significant, measurable benefits in the brain (Davidson 2002). Repeating these types of experiences not only elevates the state of mind temporarily but also transforms the brain to create stabilized personality traits or developmental stages. So what begins as a momentary experience of joy, might be stabilized through repetition as both a high happiness set point and the trait of playfulness. This, too, could be a very interesting direction for future research.

If an individual cannot change his emotional state alone, keeping playful company has also been shown to increase playfulness. Laboratory research indicates that rats that exhibit less playfulness due to environmental stressors become more playful simply by being with other less stressed, more playful rats faster than when in the company of equally stressed rats (Siviy and Panksepp 1987). Likewise, individuals might also become more playful simply by surrounding themselves with more relaxed, playful creatures of any species.

Not just playful individuals but supportive relationships in general can increase playfulness by providing a secure base for exploratory play. In a recent study conducted at Carnegie Mellon University, couples provided their partners with three components of a secure base. These included: availability, non-interference, and encouragement. Each component did in fact lead to immediate increases in exploration, however encouragement had significantly higher impact than the other two. In fact, giving an individual encouragement both to initiate and to continue exploration is expected to be a very strong predictor not just of immediate exploratory play, but also of the player's likelihood to explore in the future (Feeney and Thrush 2010).

It is also possible to create new attachment bonds at any time of life. Each attachment relationship has the possibility of influencing the child's IWM for better or worse and can be a powerful agent for restoring healthy attachment. Research shows that social play, with its shared joy, excitement, and laughter, is a catalyst for building lasting social bonds and positive attachments (Aron et al. 2000; Lee 1983; Simons, McCluskey-Fawcett, and Papini 1986).

This list surveys ways in which play can restore and cultivate playfulness. Through play-based therapies and by playing more in general—particularly with attuned play—keeping playful company, and receiving encouragement to play, individuals might play their way toward increasing playfulness. As effective

as deeper approaches to restoring playfulness might be, the power of regular doses of simple, socially engaged fun cannot be overestimated and the more integrative physically, emotionally, and cognitively, the better. Given the potential benefits to well-being, this area of study would be an important direction for future research.

Conclusion

Beginning in the first year of life, play becomes an infant's primary mode for engaging with others and with the world, setting the bar for interactions with the world to be as pleasurable as play throughout the life-span. Attuned play encourages a child to grow up to be a playful adult who experiences life as a playground. This is not only an expression of healthy development, it is also an inherent characteristic of *Homo sapiens*. Unfortunately, not every child is so lucky. According to the original research on attachment styles conducted by psychologist Mary Ainsworth, up to 50 percent of individuals do not have secure attachment experiences (Ainsworth et al. 1978). Without attachment security, these children are much more likely to grow up seeing the world as a proving ground, a battleground, or a prison. These world views can become self-fulfilling prophecies, establishing feedback loops that engender the world the child expects.

The real world, in any case, is often a politically violent and economically insecure place—anything but a playground. Is it possible that the condition of our world both reflects and reinforces a prevailing degree of attachment insecurity (Gray 2011)? If so, the greatest hope for interrupting this dangerous feedback loop is to support and restore a basic sense of security generated, reflected, and reinforced by attuned play.

Not only does play provide critical resources for dealing with stress and engendering well-being as adults, but repeated play can also rewire the brain, establishing and reinforcing the neural pathways that lead to the development of playfulness. It is never too late to establish the conditions for subjective well-being, which include a high happiness set point and a supportive network of friends. Because our survival depends less on the latest technological advances than on emotional regulation and our close, supportive relationships with each other, playing together might be the most radical and effective step we can take toward a higher happiness set point for the world.

REFERENCES

- Ainsworth, Mary D. Salter, Mary C. Blehar, Everett Waters, and Sally Wall. 1978. *Patterns of Attachment: A Psychological Study of the Strange Situation*.
- Amabile, Teresa M., Karl G. Hill, Beth A. Hennessey, and Elizabeth M. Tighe. 1994. "The Work Preference Inventory: Assessing Intrinsic and Extrinsic Motivational Orientations." *Journal of Personality and Social Psychology* 66:950–67.
- Aron, Arthur, Christine C. Norman, Elaine N. Aron, Colin McKenna, and Richard E. Heyman. 2000. "Couples' Shared Participation in Novel and Arousing Activities and Experienced Relationship Quality." *Journal of Personality and Social Psychology* 78:273–84.
- Ashby, F. Gregory, Alice M. Isen, and And U. Turken. 1999. "A Neuropsychological Theory of Positive Affect and its Influence on Cognition." *Psychological Review* 106:529–50.
- Aspelmeier, Jeffrey E., and Kathryn A. Kerns. 2003. "Love and School: Attachment/Exploration Dynamics in College." *Journal of Social and Personal Relationships* 20:5–30.
- Baer, John. 1993. *Creativity and Divergent Thinking: A Task-Specific Approach*.
- Barbas, Helen. 1995. "Anatomic Basis of Cognitive-Emotional Interactions in the Primate Prefrontal Cortex." *Neuroscience and Biobehavioral Reviews* 19:499–510.
- Barnett, Lynn A. 1985. "Young Children's Free Play and Problem-Solving Ability." *Leisure Sciences* 7:25–46.
- . 1990. "Playfulness: Definition, Design, and Measurement." In *Theory in Context and Out*, Play & Culture Studies, Vol. 3, edited by Stuart Reifel, 319–36.
- . 1991. "Characterizing Playfulness: Correlates with Individual Attributes and Personality Traits." In *Conceptual, Social-Cognitive, and Contextual Issues in the Fields of Play*, Play & Culture, Vol. 4, edited by Jaipaul L. Roopnarine, 371–93.
- . 2007. "The Nature of Playfulness in Young Adults." *Personality and Individual Differences* 43:949–58.
- . 2011–2012. "Playful People: Fun is in the Mind of the Beholder." *Imagination, Cognition, and Personality* 31:169–97.
- Barnett, Lynn A., and Douglas A. Kleiber. 1982. "Concomitants of Playfulness in Early Childhood: Cognitive Abilities and Gender." *Journal of Genetic Psychology* 141:115–27.
- . 1984. "Playfulness and the Early Play Environment." *Journal of Genetic Psychology* 144:153–64.
- Barnett, Lynn A., and Connie Magnuson. 2011, November. "The Therapeutic Value of Being Playful." Paper presented at the Leisure Research Symposium, Atlanta, GA.
- Bartholomew, Kim, and Leonard M. Horowitz. 1991. "Attachment Styles among Young Adults: A Test of a Four-Category Model." *Journal of Personality and Social Psychology* 61: 226–44.
- Bateson, Gregory. 1976. "A Theory of Play and Fantasy." In *Play—Its Role in Development and Evolution*, edited by Jerome S. Bruner, Allison Jolly, and Kathy Sylva, 119–29.
- Beals, Kristen P., Letita Anne Peplau, and Shelly L. Gable. 2009. "Stigma Management and Well-Being: The Role of Perceived Social Support, Emotional Processing, and Suppression." *Personality and Social Psychology Bulletin* 35:867–79.

- Beck, Don Edward, and Christopher C. Cowan. 1996. *Spiral Dynamics*.
- Benes, Francine M. 1998. "Human Brain Growth Spans Decades." *American Journal of Psychiatry* 155:1489.
- Berk, Laura E., Trisha D. Mann, and Amy T. Ogan. 2006. "Make-Believe Play: Wellspring for Development of Self-Regulation." In *Play=Learning: How Play Motivates and Enhances Children's Cognitive and Social-Emotional Growth*, edited by Dorothy G. Singer, Roberta M. Golinkoff, and Kathy Hirsh-Pasek, 74–100.
- Berscheid, Ellen. 2003. "The Human's Greatest Strength: Other Humans." In *A Psychology of Human Strengths: Fundamental Questions and Future Directions for a Positive Psychology*, edited by Lisa G. Aspinwall, and Ursula M. Staudinger, 37–47.
- Booth, Phyllis B., and Ann M. Jernberg. 2010. *Theraplay: Helping Parents and Children Build Better Relationships through Attachment-Based Play*.
- Bowlby, John. 1973. *Attachment and Loss: Separation, Anxiety, and Anger*. 2 vols.
- . 1980. *Attachment and Loss: Loss: Sadness and Depression*. 3 vols.
- . (1982). *Attachment and Loss: Attachment*. 2nd ed.
- Brockman, Rowan, Russel Jago, and Kenneth R. Fox. 2011. "Children's Active Play: Self-Reported Motivators, Barriers and Facilitators." *BMC Public Health* 11:461–67.
- Bruner, Jerome S. 1990. *Acts of Meaning*.
- Burgess, Lorraine, Fiona Irvine, and Akhtar Wallymahmed. 2010. "Personality, Stress and Coping in Intensive-Care Nurses: A Descriptive Exploratory Study." *Nursing in Critical Care* 15:129–40.
- Caillois, Roger. 1961. *Man, Play, and Games*. Translated by Meyer Barash.
- Carlson, Elizabeth A. 1998. "A Prospective Longitudinal Study of Disorganized/Disoriented Attachment." *Child Development* 69:1107–28.
- Carnelley, Katherine B., and Janet B. Ruscher. 2000. "Adult Attachment and Exploratory Behavior in Leisure." *Journal of Social Behavior and Personality* 15:153–65.
- Casenhiser, Devin M., Stuart G. Shanker, and Jim Steiben. (2012). "Learning through Interaction in Children with Autism: Preliminary Data From a Social-Communication-Based Intervention." *Autism* 17:220-41.
- Cassidy, Jude, and Phillip R. Shaver, eds. 1999. *Handbook of Attachment: Theory, Research, and Clinical Applications*.
- Christiano, Beth A., and Sandra W. Russ. 1996. "Play as a Predictor of Coping and Distress in Children during Invasive Dental Procedure." *Journal of Clinical Child Psychology* 25: 130–38.
- Cohen, Sheldon, and Sandra Janicki-Deverts. 2009. "Can We Improve Our Physical Health by Altering Our Social Networks?" *Perspectives on Psychological Science* 4:375–78.
- Collins, Lori. 2007. "Earning a Secure Attachment Style: The Therapist as a Surrogate Attachment Figure in the Therapeutic Dyad." (dissertation, Alliant International University).
- Connolly, Jennifer A., and Anna-Beth Doyle. 1984. "Relation of Social Fantasy Play to Social Competence in Preschoolers." *Developmental Psychology* 20:797–806.
- Csikszentmihalyi, Mihaly. 1975. *Beyond Boredom and Anxiety*.

- . 1990. *Flow: The Psychology of Optimal Experience*.
- Davidson, Richard J. 2002. "Toward a Biology of Positive Affect and Compassion." In *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature*, edited by Richard J. Davidson and Anne Harrington, 107–30.
- Davies, Bronwyn. 1997. "The Construction of Gendered Identity through Play." In *Oral Discourse and Education*. Vol. 3 *Encyclopedia of Language and Education*, edited by Bronwyn Davies and David Corson, 116–24.
- De Dreu, Carsten K. W., Matthijs Baas, and Bernard A. Nijstad. 2008. "Hedonic Tone and Activation Level in the Mood-Creativity Link: Toward a Dual Pathway to Creativity Model." *Journal of Personality and Social Psychology* 94:739–56.
- Diener Ed. 2000. "Subjective Well-Being: The Science of Happiness and a Proposal for a National Index." *American Psychologist* 55:34–43.
- Diener, Ed, and Micaela Y. Chan. 2011. "Happy People Live Longer: Subjective Well-Being Contributes to Health and Longevity." *Applied Psychology: Health and Well-Being* 3:1–43.
- Diener, Ed, and Carol Diener. 1996. "Most People are Happy." *Psychological Science* 7:181–85.
- Ebstrup, Jeanne, Lene Falgaard Eplov, Charlotta Pisinger, and Torben Jørgensen. 2011. "Association between the Five Factor Personality Traits and Perceived Stress: Is the Effect Mediated by General Self-Efficacy?" *Anxiety, Stress, and Coping* 24:407–419.
- Elias, Cynthia L., and Laura E. Berk. (2002). "Self-Regulation in Young Children: Is There a Role for Sociodramatic Play?" *Early Childhood Research Quarterly* 17:216.
- Elliot, Andrew J., and Harry T. Reis. 2003. "Attachment and Exploration in Adulthood." *Journal of Personality and Social Psychology* 85:317–31.
- Erikson, Erik H. 1963. *Toys and Reasons: Stages in the Ritualization of Experience*.
- Feeney, Brooke C. 2004. "A Secure Base: Responsive Support of Goal Strivings and Exploration in Adult Intimate Relationships." *Journal of Personality and Social Psychology* 87:631–48.
- Feeney, Brooke C., and Roxanne L. Thrush. 2010. "Relationship Influences on Exploration in Adulthood: The Characteristics and Function of a Secure Base." *Journal of Personality and Social Psychology* 98:57–76.
- Fonagy, Peter, Gyorgy Gergely, Elliot Jurist, and Mary Target. 2002. *Affect Regulation, Mentalization, and the Development of the Self*.
- Fraley, Chris R. 2002. "Attachment Stability from Infancy to Adulthood: Meta-Analysis and Dynamic Modeling of Developmental Mechanisms." *Personality and Social Psychology Review* 6:123–51.
- Fredrickson, Barbara L. 1998. "What Good are Positive Emotions?" *Review of General Psychology* 2:300–19.
- . 2001. "The Role of Positive Emotions in Positive Psychology: The Broaden-and-Build Theory of Positive Emotions." *American Psychologist* 56:218–226.
- Fredrickson, Barbara L., and Thomas Joiner. 2002. "Positive Emotions Trigger Upward Spirals toward Emotional Well-Being." *Psychological Science* 13:172–75.
- Gallagher, Emma N., and Dianne A. Vella-Brodrick. 2008. "Social Support and Emotional

- Intelligence as Predictors of Subjective Well-Being.” *Personality and Individual Differences* 44:1551–61.
- Garvey, Catherine. 1977. *Play*.
- Gibson, Eleanor J. 1988. “Exploratory Behavior in the Development of Perceiving, Acting, and the Acquiring of Knowledge.” *Annual Review of Psychology*, 39:1–42.
- Glynn, Mary Ann, and Jane Webster. 1992. “The Adult Playfulness Scale: An Initial Assessment.” *Psychological Reports* 71:83–103.
- . 1993. “Refining the Nomological Net of the Adult Playfulness Scale: Personality, Motivational, and Attitudinal Correlates for Highly Intelligent Adults.” *Psychological Reports* 72:1023–26.
- Gould, Stephen Jay. 1977. *Ontogeny and Phylogeny*.
- Gray, Peter. 2009. “How Developmental Psychology’s Marriage to the School System Distorts Our Understanding of Children.” *Psychology Today*. <http://www.psychologytoday.com/blog/freedom-learn/200909/how-developmental-psychology-s-marriage-the-school-system-distorts-our-und>.
- . 2011. “The Decline of Play and the Rise of Psychopathology in Children and Adolescents.” *American Journal of Play* 3:443–63.
- Green, Jeffery D., and W. Keith Campbell. 2000. “Attachment and Exploration in Adults: Chronic and Contextual Accessibility.” *Personality and Social Psychology Bulletin* 26:452–61.
- Grossmann, Klaus, E., Karin Grossmann, and Peter Zimmermann. 1999. “A Wider View of Attachment and Exploration.” In *Handbook of Attachment Theory and Research: Theory, Research, and Clinical Applications*, edited by Jude Cassidy and Peter Shaver, 760–86.
- Guitard, Paulette, Francine Ferland, and Élisabeth Dutil. 2005. “Toward a Better Understanding of Playfulness in Adults.” *Occupational Therapy Journal of Research* 25:9–22.
- Hebb, Donald Olding. 1961. “Distinctive Features of Learning in the Higher Animal.” In *Brain Mechanisms and Learning*, edited by Jean Francisque Delafresnay, 37–46.
- Holt-Lunstad, Julianne, Timothy B. Smith, and Bradley J. Layton. 2010. “Social Relationships and Mortality Risk: A Meta-Analytic Review.” *PLoS Medicine* 7:e1000316.
- Howard, Justine, and Karen McInnes. 2013. “The Impact of Children’s Perception of an Activity as Play Rather Than Not Play on Emotional Well-Being.” *Child: Care, Health, and Development* 39:737–42.
- Hua, Jackie Yuanyuan, and Stephen J. Smith. 2004. “Neural Activity and the Dynamics of Central Nervous System Development.” *Nature Neuroscience* 7:327–32.
- Huizinga, Johan. 1955. *Homo Ludens: A Study of the Play-Element in Culture*.
- Hutchinson, Susan L., Careen M. Yarnal, Julie Stafford-Son, and Deborah L. Kerstetter. 2008. “Beyond Fun and Friendship: The Red Hat Society as a Coping Resource for Older Women.” *Ageing & Society* 28:979–99.
- Inzelberg, Rivka. 2013. “The Awakening of Artistic Creativity and Parkinson’s Disease.” *Behavioral Neuroscience* 127:256–61.
- Jernberg, Ann M. 1979. *Theraplay: A New Treatment Using Structured Play for Problem Children and Their Families*.

- Johnson, Susan M. 2002. *Emotionally Focused Couple Therapy with Trauma Survivors: Strengthening Attachment Bonds*.
- . 2008. *Hold Me Tight: Seven Conversations for a Lifetime of Love*.
- Kandel, Eric R. 1998. "A New Intellectual Framework for Psychiatry." *American Journal of Psychiatry* 155:457–69.
- Kehoe, Priscilla, William J. Shoemaker, Laura Triano, Jean Hoffman, and C. Arons. 1996. "Repeated Isolation in the Neonatal Rat Produces Alterations in Behavior and Ventral Striatal Dopamine Release in the Juvenile after Amphetamine Challenge." *Behavioral Neuroscience* 110:1435–44.
- Keyes, Corey L. M., Dov Shmotkin, and Carol D. Ryff. 2002. "Optimizing Well-Being: The Empirical Encounter of Two Traditions." *Journal of Personality and Social Psychology* 82:1007–22.
- Lauder, Jean M. 1993. "Neurotransmitters as Growth Regulatory Signals: Role of Receptors and Second Messengers." *Trends in Neurosciences* 16:233–40.
- Lee, Phyllis C. 1983. "Play as a Means for Developing Relationships." In *Primate Social Relationships: An Integrated Approach*, edited by Robert A. Hinde, 82–89.
- Lieberman, Josefa Nina. 1965. "Playfulness and Divergent Thinking: An Investigation of Their Relationship at the Kindergarten Level." *Journal of Genetic Psychology* 107:219–24.
- . 1966. "Playfulness: An Attempt to Conceptualize a Quality of Play and of the Player." *Psychological Reports* 19:1278.
- . 1977. *Playfulness: Its Relationship to Imagination and Creativity*.
- Lindstrom, Heather A., Thomas Fritsch, Grace Petot, Kathleen A. Smyth, Chien H. Chen, Sara M. Debanne, Alan J. Lerner, and Robert P. Friedland. 2005. "The Relationships between Television Viewing in Midlife and the Development of Alzheimer's Disease in a Case-Control Study." *Brain & Cognition* 58:157–65.
- Liotti, Giovanni. 1992. "Disorganized/Disoriented Attachment in Etiology of Dissociative Disorders." *Dissociation* 5:196–204.
- Liu, Dong, Joise Doria, Beth Tannenbaum, Christian Caldji, Darlene Francis, Alison Freedman, Shakti Sharma, Deborah Pearson, Paul M. Plotsky, and Michael J. Meaney. 1997. "Maternal Care, Hippocampal Glucocorticoid Receptors, and Hypothalamic–Pituitary–Adrenal Responses to Stress." *Science* 277: 1659–62.
- Lykken, David Thoreson. 1999. *Happiness: What Studies on Twins Show Us about Nature, Nurture, and the Happiness Set Point*.
- Lyubomirsky, Sonja, Laura King, and Ed Diener. 2005. "The Benefits of Frequent Positive Affect: Does Happiness Lead to Success?" *Psychological Bulletin* 131:803–55.
- Magnuson, Cale David. "The Playful Advantage: How Playfulness Enhances Coping with Stress." (master's thesis, University of Illinois, Urbana-Champaign, 2011). <https://www.ideals.illinois.edu/search?scope=%2F&query=Magnuson&rpp=10&sort>.
- Main, Mary, and Hillary Morgan. 1996. "Disorganization and Disorientation in Infant Strange Situation Behavior: Phenotypic Resemblance to Dissociative States." In *Handbook of Dissociation: Theoretical, Empirical, and Clinical Perspectives* edited by Larry Michelson and William J. Ray, 107–138.

- Main, Mary, and Judith Solomon. 1986. "Discovery of an Insecure-Disorganized/Disoriented Attachment Pattern: Procedures, Findings and Implications for the Classification of Behavior." In *Affective Development in Infancy*, edited by Michael W. Yogman and T. Berry Brazelton, 95–124.
- Marks-Tarlow, Terry. 2012. "The Play of Psychotherapy." *American Journal of Play* 4: 352–77. Originally published in a slightly different form in *Clinical Intuition in Psychotherapy: The Neurobiology of Embodied Response*, by Terry Marks-Tarlow. Reprinted by permission of the author and the publisher.
- McLeish, Martin A., Ramona L. Paetzold, and Steven W. Rholes. 2010. "Adult Attachment and Exploration: Linking Attachment Style to Motivation and Perceptions of Support in Adult Exploration." *Basic and Applied Social Psychology* 32:196–205.
- Mikulincer, Martin. 1997. "Adult Attachment Style and Information Processing: Individual Differences in Curiosity and Cognitive Closure." *Journal of Personality and Social Psychology* 72:1217–30.
- Mikulincer, Mario, and Daphna Arad. 1999. "Attachment Working Models and Cognitive Openness in Close Relationships: A Test of Chronic and Temporary Accessibility Effects." *Journal of Personality and Social Psychology* 77:710–25.
- Mobbs, Dean, Michael D. Greicius, Eiman Abdel-Azim, Vinod Menon, and Allan L. Reiss. 2003. "Humor Modulates the Mesolimbic Reward Centers." *Neuron* 40:1041–48.
- Montagu, Ashley. 1981. *Growing Young*.
- Nicolopoulou, Ageliki. 2005. "Play and Narrative in the Process of Development: Commonalities, Differences, and Interrelations." *Cognitive Development* 20:495–502.
- Ogawa, John R., L. Alan Sroufe, Nancy S. Weinfield, Elizabeth A. Carlson, and Byron Egeland. 1997. "Development and the Fragmented Self: Longitudinal Study of Dissociative Symptomatology in a Nonclinical Sample." *Development and Psychopathology* 9:855–80.
- Panksepp, Jaak. (2004). *Affective Neuroscience: The Foundations of Human and Animal Emotions*.
- . 2007. "Can PLAY Diminish ADHD and Facilitate the Construction of the Social Brain?" *Journal of the Canadian Academy of Child and Adolescent Psychiatry* 16:57–66.
- Peidro, Roberto, and Ricardo Edgar Comasco. 2007. *Con el Corazon en el Tango. Guia Para Prevenir Enfermedades Cardiacas Bailando el Tango*. National Academy of Tango. Buenos Aires. April 17, 2007.
- Pellis, Sergio M. 2010. "Conservative Motor Systems, Behavioral Modulation and Neural Plasticity." *Behavioral Brain Research* 214:25–9.
- Peterson, Christopher, and Martin E. P. Seligman. 2004. *Character Strengths and Virtues: A Handbook and Classification*.
- Piaget, Jean. 1962. *Play, Dreams, and Imitation in Childhood*. Translated by Caleb Gattegno, and Frances. M. Hodgson.
- Poo, Mu-ming. 2001. "Neurotrophins as Synaptic Modulators." *Nature Reviews Neuroscience* 2:24–32.
- Porges, Stephen, and Ruth Buczynski. 2011. *The Polyvagal Theory for Treating Trauma*.

- Webinar, June 15, 2012. <http://www.nicabm.com/nicabmblog/the-polyvagal-theory-in-action-how-heart-rate-figures-into-trauma-treatments/>.
- Post, Robert M., and Susan R. B. Weiss. 1997. "Kindling and Stress Sensitization." In *Bipolar Disorder: Biological Models and Their Clinical Application*, edited by Russell T. Joffe, and L. Trevor Young, 93–126.
- Ridley, Matt. 2003. *The Agile Gene: How Nature Turns on Nurture*.
- Rholes, Steven R. W., Ramona L., and Mike Friedman. 2008. "Ties That Bind: Linking Personality to Interpersonal Behavior through the Study of Adult Attachment Style and Relationship Satisfaction." In *Personality and Social Behavior*, edited by Frederick Thomas Rhodewalt, 117–48.
- Roisman, Glenn I., Elena Padrón, Alan L. Sroufe, and Byron Egeland. 2003. "Earned-Secure Attachment Status in Retrospect and Prospect." *Child Development* 73:1204–19.
- Rosenblum, Lenoard A., Jeremy D. Coplan, Steven J. Friedman, Trina B. Basoff, Jack M. Gorman, and Michael W. Andrews. 1994. "Adverse Early Experiences Affect Noradrenergic and Serotonergic Functioning in Adult Primates." *Biological Psychiatry* 35:221–27.
- Sawaguchi, Toshiyuki, and Patricia S. Goldman-Rakic. 1991. "D1 Dopamine Receptors in Prefrontal Cortex: Involvement in Working Memory." *Science* 251:947–50.
- Schaefer, Charles E. 1993. "What Is Play and Why Is It Therapeutic?" In *The Therapeutic Powers of Play*, edited by Charles E. Schaefer, 1–15.
- Schore, Allan N. 1994. *Affect Regulation and the Origin of the Self: The Neurobiology of Emotional Development*.
- . 1999. "Parent-Infant Communication and the Neurobiology of Emotional Development." Symposium presented at the Zero to Three 14th Annual Training Conference, Los Angeles, CA, December 1999.
- . 2001. "Effect of a Secure Attachment Relationship on Right Brain Development, Affect Regulation, and Infant Mental Health." *Infant Mental Health Journal* 22:7–67.
- . (2003). *Affect Regulation and the Repair of the Self*.
- Schwartzman, Helen B. 1978. *Transformations: The Anthropology of Children's Play*.
- Siegel, Daniel J. 2010. *Mindsight: The New Science of Personal Transformation*.
- Simons, C. J. R., Kathleen A. McCluskey-Fawcett, and Dennis R. Papini. 1986. "Theoretical and Functional Perspective on the Development of Humor During Infancy, Childhood, and Adolescence." In *Humor and Aging*, edited by Lucille Nahemow, Kathleen A. McCluskey-Fawcett, and Paul E. McGhee, 53–77.
- Simpson, Jeffry A., Wilson Stevens Rhodes, Lorne Campbell, Sisi Tran, and Carol L. Wilson. 2003. "Adult Attachment, the Transition to Parenthood, and Depressive Symptoms." *Journal of Personality and Social Psychology* 84:1172–87.
- Singer, Jerome L., and Dorothy G. Singer. 1998. "Barney & Friends" as Entertainment and Education: Evaluating the Quality and Effectiveness of a Television Series for Preschool Children. In *Research Paradigms, Television, and Social Behavior*, edited by Joy Keiko Asamen and Gordon L. Berry, 205–67.

- Singer, Jerome L., Dorothy G. Singer, and Lonnie R. Sherrod. 1980. "A Factor Analytic Study of Preschooler's Play Behavior." *American Psychology Bulletin* 2:143–56.
- Singh-Manoux, Archana, Marcus Richards, and Michael Marmot. (2003). "Leisure Activities and Cognitive Function in Middle Age: Evidence from the Whitehall II Study." *Journal of Epidemiology & Community Health* 57:907–913.
- Siviy, Stephen Michael, and Jaak Panksepp. 1987. "Sensory Modulation of Juvenile Play in Rats." *Developmental Psychobiology* 20:39–55.
- Smilansky, Sara. 1990. "Sociodramatic Play: Its Relevance to Behavior and Achievement in School." In *Children's Play and Learning: Perspectives and Policy Implications*, edited by Sara Smilansky, and Edgar Klugman, 18–42.
- Son, Julie S., Deborah L. Kerstetter, Careen M. Yarnal, and Birgitta L. Baker. 2007. "Promoting Older Women's Health and Well-Being through Social Leisure Environments: What We Have Learned from the Red Hat Society." *Journal of Women & Aging* 19:89–104.
- Špinka, Marek, Ruth C. Newberry, and Marc Bekoff. 2001. "Mammalian Play: Training for the Unexpected." *The Quarterly Review of Biology* 76:27–9.
- Sroufe, L. Alan, and Everett Waters. 1977. "Attachment as an Organizational Construct." *Child Development* 48:1184–99.
- Staempfli, Marianne B. 2007. "Adolescent Playfulness, Stress Perception, Coping, and Well Being." *Journal of Leisure Research* 39:393–412.
- Statham, June and Elaine Chase. *Childhood Wellbeing: A Brief Overview* (briefing paper, Childhood Wellbeing Research Center, Loughborough, United Kingdom, 2010).
- Stern, Daniel N. 1985. *The Interpersonal World of the Infant: A View from Psychoanalysis and Developmental Psychology*.
- Sutton-Smith, Brian. 1997. *The Ambiguity of Play*.
- Tatkin, Stan. 2011. *Wired for Love: How Understanding Your Partner's Brain and Attachment Style Can Help You Defuse Conflict and Build A Secure Relationship*.
- Tegano, Deborah W. 1990. "Relationship of Tolerance of Ambiguity and Playfulness to Creativity." *Psychological Reports* 66:1047–56.
- Teillard De Chardin, Pierre. 1955. *Le Phénomène Humain* [The phenomenon of man].
- Thomas, David G., Elizabeth Whitaker, C. Donel Crow, Vickie Little, Laura Love, M. Sue Lykins, and Margaret Letterman. 1997. "Event-Related Potential Variability as a Measure of Information Storage in Infant Development." *Developmental Neuropsychology* 13:205–32.
- Trevlas, Efthimios, Vasilios Grammatikopoulos, Nikolaos Tsigilis, and Evridiki Zachopoulou. 2003. "Evaluating Playfulness: Construct Validity of the Children's Playfulness Scale." *Early Childhood Education Journal* 31:33–9.
- Trossero, Frederico. 2006. *Tango Terapia*, (Coquena Ediciones, Rosario, Santa Fe, Argentina.)
- Tumini, Romina. "About Tango Therapy." 2009. *InnerTango*. <http://innertango.org/about-tango-therapy>.
- Vandenberg, Brian. 1980. "Play, Problem-Solving, and Creativity." *New Directions for Child Development* 9:49–68.

- Vygotsky, Lev Semenovich. 1986. *Thought and Language*. Translated by Alex Kozulin.
- Webster, Jane, and Joseph J. Martocchio. 1992. "Microcomputer Playfulness: Development of a Measure with Workplace Implications." *MIS Quarterly* 16:201–26.
- Weintraub, Pamela. 2012. "The Man Who Makes Rats Laugh: Jaak Panksepp." *Discover* 33: 58–66.
- Wilber, Ken. 2000. *Integral Psychology: Consciousness, Spirit, Psychology, Therapy*.
- . 2001. *A Theory of Everything: An Integral Vision for Business, Politics, Science, and Spirituality*.
- . 2007. *The Integral Vision: A Very Short Introduction to the Revolutionary Integral Approach to Life, God, the Universe, and Everything*.
- Winnicott, Donald Woods. 1965. *The Maturation Process and the Facilitating Environment: Studies in the Theory of Emotional Development*.
- . 1971. *Playing and Reality*.
- . 1972. "Basis for Self in Body." *International Journal of Child Psychotherapy* 1:7–16.
- Yager, Susan E., Leon A. Kappelman, Glenn A. Maples, and Victor Prybutok. 1997. "Microcomputer Playfulness: Stable or Dynamic Trait?" *ACM SIGMIS Database* 28:43–52.
- Yamada, Hiroki, Norihiro Sadato, Yukuo Konishi, Kouki Kimura, Masato Tanaka, Yoshiharu Yonekura, and Yasushi Ishii. 1997. "A Rapid Brain Metabolic Change in Infants Detected by fMRI." *NeuroReport* 8:3775–78.
- Yamada, Hiroki, Norihiro Sadato, Yukuo Konishi, Satoshi Muramoto, Kouki Kimura, Masato Tanaka, Yoshiharu Yonekura, Yasushi Ishii, and Hideshi Itoh. 2000. "A Milestone for Normal Development of the Infantile Brain Detected by Functional MRI." *Neurology* 55:218–23.