Research Article

Ghana Social Science Journal
2023, Vol.20 (2): 137–159

Publisher: School of Social Sciences UG

Dispositional empathy and perceived caregiver-child interaction in early childhood care and education: Examining the moderator effects of age and personality

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Abstract

Although research have established the relationship between dispositional empathy and caregiver-child interactions, the influences of the different dimensions of dispositional empathy have not been adequately explored among caregivers in the early childhood care and education setting. In this study, we examined how empathic dispositions of caregivers in early childhood care and education in Ghana influenced their beliefs and intentions about their interactions with children in their care. We tested the assumption that age and personality moderated the relationship between caregivers' dispositional empathy and their perceived interactions with the children. We conducted a cross-sectional survey among 154 early childcare education teachers in Accra, the capital of Ghana, with ages ranging from 19 to 68 years using Wilcox-Herzog and Ward's (2004) four aspects of caregiver-child interaction. We found empathic concern and personal distress effects on perceived caregiver-child interaction. Empathic concern is the strongest predictor of caregivers' perceived interaction with the children. We also found a moderated effect for neuroticism on the relationship between dispositional empathy and perceived caregiver-child interaction. The implications of the findings are discussed in the context of culture and early childhood care.

Article History: 10 January 2023 Accepted 11 November 2023

Keywords: dispositional empathy, perceived caregiver-child interaction, early childhood care, education

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Introduction

Nurturance of children's attachment relationships with significant others, besides their primary caregivers, has a positive influence on children (e.g., Knight, 2011; Verschueren & Koomen, 2012). This is because these secondary caregiver-child attachment relationships have the potential to reduce adverse effects of inadequate parental care for children (Bredy et al., 2003). Children's ability to regulate emotions, develop and refine impulse control and develop attachment security evolve within the context of early relationships forged by care-giving behaviors exhibited by early childhood educators (Howes, 1997; Lane, 2012).

Early-child care interaction is the context within which all learning take place. For example, children observe the environment and monitor their experiences. Supportive early relationships foster a wide variety of pro-social behaviors towards both peers and adults (Stocks, Lishner & Decker, 2009). In a rapidly changing world, children are spending long hours interacting with caregivers because parents have to work long hours. The usefulness of research to understand the mechanisms at play in caregiver and child interaction within contexts that are largely unregulated is without question.

In this study, we explored the ways in which caregivers' perceived interaction with children in early childhood care and education (ECCE) centers were influenced by the empathic dispositions of the caregivers in a developing country.

Early childhood care and education in Ghana

In 2007, the Government of Ghana incorporated two additional years of early childhood education, (i.e., kindergarten 1 and kindergarten 2) into the country's universal basic education programme. This expansion has resulted in Ghana achieving one of the highest enrollment rates for preprimary education in the region, however, the overall quality of kindergarten education in Ghana remains subpar (Wolf, Aber, & Behrman, 2018). Given the widespread enrollment of children in kindergarten programmes throughout the country, enhancing teacher skills and providing training is a primary focus for the government. This initiative has the potential to enhance the quality of early childhood education significantly, ultimately leading to substantial improvements in developmental and academic outcomes (Wolf et al., 2018).

Caregiver-child Interaction in ECCE Centres

High quality interaction is necessary for the realization of the goals of early childhood care and education. Young children assess their caregivers' emotional appraisals of their responses as a guide to their own behaviors. The nature of caregiver-child interactions in ECCE centers is to an extent, predictive of the overall quality of childcare (Vandell, 2004; Wendland-Carro, Piccinini & Millar, 1999). High quality childcare in ECCE centres has been defined by Vandell (2004) as "involving supportive interactions with

caregivers, positive interactions with peers, and opportunities for cognitively stimulating play" (p. 391). High quality interaction includes warmth, sensitivity, and emotional responsiveness. It is anticipated that a caregiver who is high on empathic concern may likely have strong beliefs and intentions about warm, sensitive, and responsive care-giving behaviors towards children. Further, a high level of the perspective-taking dimension of empathy is an indication that a caregiver is likely to have strong beliefs about taking children's perspectives into consideration and seeing situations from the point of view of children.

Demonstrating empathy is an important contribution to the fulfilment of the goal of emotional support in early childhood care and education. When caregivers understand children in the context of their naivety, they can provide care and nurturance to facilitate aspects of the children's' development such as attachment security, emotion-regulation, prosocial behaviors, and language proficiency.

ECCE caregivers' beliefs and intentions towards caregiver-child interaction

We adopted Wilcox-Herzog and Ward's (2004) four aspects of caregiver-child interaction — teacher sensitivity, verbal teacher involvement, non-verbal teacher involvement and teacher play styles— which in their view are associated with developmental outcomes. Teacher sensitivity refers to the amount of warmth, understanding and enthusiasm that caregivers contribute to their interactions. Verbal involvement is the frequency and quality of the caregivers' verbal communication with the children. Teachers' non-verbal involvement is the third component of caregivers' beliefs and intentions, and it is the caregivers' non-verbal communication or 'body language' expressed during interaction. Finally, 'teacher play styles' refers to caregivers' general outlook on their interactions with the children. It includes the nature of the caregivers' attitudes towards play, their approach to lending help to the children as well as mingling with them.

Findings from previous studies (e.g., Lim & Lim, 2012; Sakellariou & Rentzou, 2012; Wilcox-Herzog & Ward, 2004) that have adopted the use of these four dimensions of caregiver-child interaction show that participants who placed importance on appropriate care-giving practices were more likely to allow their beliefs and intentions to guide and inform their classroom interactions. These findings suggest that the quality of overall caregiver-child interaction is dependent on caregivers' beliefs about these aspects of interaction, and their intentions to practice these beliefs.

Dispositional empathy and ECCE caregivers' perceived interaction with Children

It has found that when caregivers in Ghanaian ECCE centers engaged in developmentally-appropriate interactions with the children, it helped the children to achieve significant developmental milestones (Mohammed, Afaya & Abukari, 2023). Additionally, Djarbeng (2019) recommends that Ghanaian teachers personalise the learning experience for each child, as every child possesses distinct characteristics and needs. The author is of the view

that during their teaching, teachers should actively listen to the children and offer various opportunities for them to engage in the learning process. The utilisation of empathy-oriented interactions during teaching, makes this strategy viable.

Empathy, ability to develop compassion for others and share their feelings, has been variously conceptualized (e.g., Kunyk & Olson, 2001). One aspect of conceptualization is whether empathy is a trait or skill (Konrath, Meier, & Bushman, 2018; Lamm, Batson & Decety, 2007; Reynold & Scott, 2000). When conceptualized as a trait, it is described as a stable inherent ability to sense or feel what another person is experiencing, usually in a way that produces a desire or willingness to help. This contrasts situational empathy, which refers to one's immediate transitional empathetic reaction that is elicited by a specific situation. As a skill, empathy is described as a cognitive, emotional, and behavioral capacity to respond to others. This is known as perspective taking. Trait empathy (also referred to as dispositional empathy) is closely related to personality traits such as agreeableness (Mooradian, Davis, & Matzler, 2011). To predict behavior in social interactions, it is more appropriate to examine influence of stable traits such as dispositional empathy.

Dispositional empathy is identified as a multidimensional construct (Davis, 1983; Konrath, Meier, & Bushman, 2018). For example, Davis (1996) makes a distinction between cognitive and affective empathy. Cognitive empathy (fantasy and perspective-taking) refers to the tendency to understand other's negative experience. In contrast, affective empathy (empathic concern and personal distress), sometimes referred to as emotional empathy, refers to the tendency to be emotionally affected by the experiences of others (Davis, 1996). It is the type of empathy that is made possible by vicariously experiencing the feelings of others in negative circumstances.

Age and dispositional empathy

Although fairly stable across time and situations, dispositional empathy is not a static tendency. It is subject to change in response to developmental, social, and environmental changes (Bellini & Shea, 2005; Konrath, O'Brien, & Hsing, 2011). The relationship between age and empathy has often been theorized in social psychology from two diametrically opposite viewpoints. Following the 'adaptive aging perspective,' Marshall (1996) asserted that older people possess qualities and experiences that enhance their empathic responding. According to this model older adults over the years have gained experiences and qualities that enhance their nurturing and care-giving abilities as well as their understanding of others. Conversely, in line with the 'life course perspective' (Pearlin & Skaff, 1996), as people grow older, their empathic responding decreases due to various life stresses and negative life experiences. From this perspective therefore, as age increases, so do the pressures of social roles and obligations, disengagement tendencies and other life contingencies which have adverse effects on social-emotional responses such as empathy. The effect of age may not be as clear-cut. In some studies, however, the

age and empathy relationship is not a linear one. In one study for example, it is reported that middle-aged individuals tend to score higher on empathy than younger and older individuals (O'Brien, Konrath, Grühn & Hagen, 2013). The evidence therefore is in support of a nonlinear relation between age and empathy and therefore affect the relation between empathy and the quality of childcare.

Personality and dispositional empathy

While there has been a long-standing interest in understanding the personality traits of effective teachers, dating back to the work of Dodge (1943), there has been a paucity of research on teacher personality with regard to established personality theories (Kim, Jörg, & Klassen, 2019). Göncz (2017) conducted a review of teacher personality studies identifying five major categories of research in this area, distinguishing them by their research objectives. These categories are: (a) teacher typologies, (b) teachers' desirable and undesirable qualities, (c) teachers' professional behaviors and their influence on students, (d) teachers' professional identity, and (e) teacher personality using established personality models. Göncz however points out that more research is required in the fifth category (i.e., using established personality models), as it can be beneficial for developing well-founded theories about teacher personality. The author goes on to suggest that personality theories, especially the Five-Factor Model (Costa & McCrae, 1992), offer a promising viable basis for developing a more comprehensive theory of teacher personality, as they can account for both the stability and variability of teachers' traits, behaviors, and identities across different situations and contexts. Nonetheless, the author highlights the importance of a broader concept of teacher personality theory, that considers the social and developmental aspects of teaching, including factors like teacher-child interactions.

The question regarding whether personality remains stable or can be modified has been debated for decades, since the work of McCrae and Costa (1982). However, recent research (e.g., Roberts, Walton, & Viechtbauer, 2006) suggests that while personality can change, such changes tend to be subtle and occur gradually with age. Personality research among early childhood teachers has many benefits. For example, Kim, Jörg, and Klassen (2019) indicate that personality research may result in increased self-awareness among teachers, when they are sensitized on which personality qualities they may want to cultivate over time, to facilitate their adaptation to various classroom situations. Consequently, they may begin to reflect on their self-concept, their perceived image within the school community, and their potential impact on the children in their care. The authors believe that this increased self-awareness may prompt teachers to engage in skill development to enhance their practice. Klassen, et al. (2018) note that standards of teaching practices, student behaviors, and educational contexts can vary widely between countries. For this reason, it will be beneficial if future studies on teacher personality encompass a diverse range of cultural contexts (Kim, Jörg, & Klassen, 2018).

Empathy is reportedly associated with four of the Big five personality dimensions. Mooradian et al. (2011), for example showed that empathic concern is basically agreeableness; personal distress is neuroticism; perceptive taking is inter-related with agreeableness, openness, and low neuroticism. Similarly, Del Barrio, Aluja and Garcia, (2004) reported associations between empathy and conscientiousness and extraversion. There are also good reasons for personality to have strong and stable associations with dispositional empathy. For example, agreeableness, likely involves feelings of warmth, compliance, sympathy, and trust, which are also typical of the empathic concern dimension of empathy. Openness to experience, typically characterized by curiosity, imagination, wide interests, and open-mindedness, may also involve perspective-taking while empathizing with others. Finally, neuroticism involves the tendency to experience feelings of anxiety, irritability, vulnerability and depression, the effects of these on empathy are obvious. In at least two previous studies, weak or negligible associations were found between empathy and conscientiousness and extraversion (Del Barrio, Aluja, & Garcia, 2004; De Corte et al., 2007). Consistent with these, we examined openness, agreeableness, and neuroticism in the current study as they have been more directly related to dispositional empathy than the other conscientiousness and extraversion.

The current study

Present global economic circumstances require both parents to work outside the home, usually for long hours, creating the need for children to be enrolled earlier in childcare. As a result, children are spending increasing time periods with secondary caregivers (Bidwell, Parry & Watine, 2014). The situation has led to a proliferation of both public and private ECCE centers in Ghana. This situation will not be different from other emerging economies. Despite this, little attention has been paid to secondary caregivers as well as the empathy-PCCI relationship within the Ghana context. Given the important role that empathy plays in social interactions and care for others, it is important to examine how it might impact relationships in early childcare in Ghana.

The general aim of the study was to examine the influence of dispositional empathy on ECCE caregivers' perceived caregiver-child interaction. We also aimed at finding out if age and three personality dimensions (openness, agreeableness, and neuroticism) moderate the relationship between dispositional empathy and perceived caregiver-child interaction among ECCE caregivers. Based on this, three hypotheses were examined. First, we proposed that dispositional empathy will explain perceived caregiver-child interaction. We also predicted that the older a caregiver is the less likely perceived caregiver-child interaction will be influenced by dispositional empathy. Finally, we predicted that caregivers high on openness and agreeableness are more likely to have positive beliefs and intentions towards caregiver-child interaction. Inversely, caregivers high on neuroticism are less likely to have positive beliefs and intentions towards caregiver-child interaction.

A large number of studies on dispositional empathy in social psychological research have compared participants on either affective or cognitive empathy (e.g., Quan-McGimpsey, et al., 2015; Todd, Bodenhausen, & Galinsky 2012). Other studies have focused on teacher personality or social competencies (Rasyad, Wiyono, Zulkarnain, & Sucipto, 2019; Utami, Pranoto, & Latiana, 2021). However, as asserted by Davis (1983), the one-sided approach to empathy research does not provide adequate understanding of how the individual dimensions of empathy influence behavior. This study filled this gap by taking an integrative approach that focused on the *individual dimensions of dispositional empathy* of ECCE caregivers in Ghana. These distinct dimensions possibly have varying influences on the beliefs and intentions of ECCE caregivers towards their caregiver-child interactions. As such, the findings of this study provide a holistic appreciation of how the differences in these dimensions independently influence the way in which caregivers perceive their interactions with the children in their care.

Methods

Setting and population

The study was conducted in urban communities selected from the Ga East district, located in the capital of Ghana. This area was purposively selected for the study because it is a geographical area in which an estimated 140 public and private ECCE centers can be found. The area has a population of 147,742 (Ghana Statistical Service, 2014). The population for the study was therefore made up of the ECCE caregivers working in public and private ECCE centers.

Sample

We used the purposive sampling technique to select the sample for this study. The inclusion criterion was for participants to have worked for a minimum of one month as caregivers of children below six years, in public or private ECCE centers in the Ga East District of the Greater Accra region. A sample of 180 participants was initially selected for the study of which 166 returned completed questionnaires. Twelve questionnaires were eliminated for poor or partial completion of the questionnaires and therefore the analysis for the study analysis was based on 154 fully completed questionnaires. Of the 154 respondents, there were 68 (44%) caregivers in public ECCE centers, and 86 (56%) caregivers in private ECCE centers. The respondents included 147 (95%) females and 7 (5%) males. All male respondents were based in private ECCE centers. The age of the participants ranges from 19 to 68 years with a mean age of 30.9 years (SD = 8.36 years). The duration of experience in early childhood care and education ranged from 6 weeks to 37 years. There were 131 (85%) trained caregivers and 23 (15%) untrained caregivers. Trained caregivers are those who have received any form of formal training in early child education.

Measures

The measures used in this study are standardized instruments developed in other cultural contexts and therefore, to ensure they were appropriate for this cultural context, we retested all the scales and made modifications where necessary in a pilot study. The process of modification involved a short discussion between the researchers and four *expert* ECCE caregivers who were selected from the population of the study. The main aim of this discussion was to find out the caregivers' understanding of the original items in the scales. In instances where there were contextual or linguistic discrepancies the *experts* suggested words or expressions as substitutes for the items in the original scale. For example, in the original version of the Interpersonal Reactivity Index, Item 6, 'In emergency situations, I feel apprehensive and ill-at-ease' was modified to: 'In emergency situations, I feel anxious and uncomfortable.' The key measures used are described below.

Dispositional empathy: The Interpersonal Reactivity Index (Davis, 1980) was used to measure dispositional empathy. There are four sub-scales in this instrument; fantasy, perspective-taking, empathic concern, and personal distress which were used as four separate independent variables. These four dimensions of dispositional empathy have been shown to form two factors - cognitive and affective. Fantasy and perspective-taking make up the cognitive factor and empathic concern and personal distress make up the affective factor. Each sub-scale has seven (7) items. Item scores were aggregated to obtain total score for each of the four dimensions. Reliability values of the perspective-taking, fantasy, empathic concern, and personal distress sub-scales are .73, .83, .73 and .77 respectively (De Corte, et al. (2007). These sub-scales yielded acceptable reliability values in the study as well: perspective-taking (α = .77); fantasy (α = .77); empathic concern (α = .78); personal distress (α = .75).

The Beliefs and Intentions Questionnaire (Wilcox-Herzog & Ward, 2004) measured perceived caregiver-child interaction. The four areas considered in developing this instrument are: teacher sensitivity, teacher involvement (verbal), teacher involvement (non-verbal) and teacher play styles. The instrument consists of thirty-seven (37) items, with 17 items measuring beliefs and 20 items measuring intentions. Reliability value of the Beliefs and Intentions Questionnaire is .85 (Wilcox-Herzog & Ward, 2004). Total score for the measure was obtained by aggregating all item scores. The internal consistency of the instrument in this study was high, as evidenced by a Cronbach alpha of .83.

The NEO-Factor Inventory (NEO-FI) (Costa & McCrae, 2010). was used as a measure of personality The instrument originally has five dimensions, namely: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Three dimensions, Openness, Agreeableness and Neuroticism were used primarily because available research evidence show a consistent relation between these and dispositional empathy but not conscientiousness and extraversion. Each dimension was measured by 12 items, and they have been reported to have reasonable reliability values (NEO PI-R; Costa & McCrae, 1992). Internal consistencies of these sub-scales were high: openness (α = .79);

agreeableness (α = .77); neuroticism (α = .78).

The Organizational Commitment scale (Allen & Meyer, 1990) was used to measure affective job commitment. Affective job commitment is a single dimension extracted from the original scale which consists of two other dimensions, namely: continuance commitment and normative commitment. Because affective job commitment portrays the strongest personal emotional affiliation to job or organization (Karim & Noor, 2006), it was deemed the most appropriate for use in this study. Cronbach alpha of this sub-scale yielded a value of .78 in the study.

Procedure

The study received ethical approval from the Ethics Committee of the Humanities of the University of Ghana (protocol number: ECH 008/15-16). Participants completed an informed consent form following permission from the respective ECCE centers where they were employed. A total of forty-one (41) ECCE centers were selected for the study, 23 (56%) of them were public ECCE centers and 18 (44%) were private ECCE centers. Appointments were booked with each ECCE center for the specific dates and times for data collection to be carried out. A set of four questionnaires was handed out to each of the participants. These were: the dispositional empathy questionnaire, the beliefs and intentions questionnaire, the personality questionnaire containing the three personality dimensions, and the miscellaneous questionnaire. Participants were permitted to complete the questionnaires at their own convenience, and the collection of the questionnaires was conducted on a later date.

Data Analyses

The data analyses were conducted using SPSS version 23. With a 0.05 level of significance, three hierarchical multiple regression analyses were conducted to determine the effects of the four dimensions of dispositional empathy (fantasy, perspective taking, empathic concern and personal distress) on PCCI. In all the regression analyses, age of the participants measured in years, years of experience, job commitment, training, and satisfaction with salary were used as control variables and entered at the first step in the hierarchical regression. Dispositional empathy was entered at the second step.

Similarly, moderation analysis was done to test for the influence of age and personality (agreeableness, openness, and neuroticism) on the relationship between dispositional empathy and perceived caregiver-child interactions following the procedures following Baron and Kenny (1986) approach. In this approach, two multiple linear regression analyses were conducted. In the first step, the variables of the regression were dispositional empathy and age, and the moderator was the interaction between dispositional empathy and age. In the second moderation analysis, dispositional empathy and personality were the independent variables and the moderator variable was the interaction between dispositional empathy and personality. The raw scores were used (without centering)

in the moderation analysis because it has been reported to have not influence on the results (Kromrey, & Foster-Johnson, 1998). Normality of scores was based on skewness and kurtosis values between +2 and -2 (Tabachnick, Fidell, & Ullman, 2007). All the test scores were evaluated as normal. The internal consistency reliability coefficients measured with Cronbach alpha ranged between .76 and .85 for all measures. Minimum acceptable coefficients are about .70 (Nunnaly, 1978).

Results

Relationship among study variables

In preliminary analyses, we conducted correlations using the Pearson *r* between perceived caregiver-child interactions (PCCI) and other key variables. Moderate negative correlations were found between PCCI and personal distress (r = -0.68, p <.001), and neuroticism (r = -.61, p < .001) but had positive association with empathic concern (r = 0.62, p < 0.001). Furthermore, low to moderate correlations were observed between PCCI and age (r =.45, p < .001), perspective-taking (r =.51, p < .001) and agreeableness(r =0.56, p<.001). Fantasy, openness, and job commitment did not have significant correlations with PCCI.

Dispositional empathy and perceived caregiver-child interactions

The first goal was to examine the prediction that perceived caregiver-child interactions is explained by dispositional empathy. We also examined the prediction that empathic concern will be a stronger predictor of the perceived caregiver-child interactions than fantasy, perspective-taking and personal distress. The prediction that perspective-taking will account for the least significant variance in PCCI was also examined. The results are presented in Table 1 found a significant overall multiple regression coefficient but did not find significant effects for all variables. The control variables did not account for significant variance in the perceived caregiver-child interactions. Three of the four dimensions of dispositional empathy (empathic concern, perspective-taking and personal distress) were significant predictors of perceived caregiver-child interactions.

Table 1: Summary of Hierarchical Multiple Regression Analysis for Predictors of PCCI

Variable		*B*	*S.E.*	β	*t*	*P*
Step 1	Job Commitment	.045	.072	.051	.625	.533
	Salary Satisfaction	-.650	.741	-.074	-.878	.381
	Training	.004	.019	.019	.229	.819
	Years of Experience	-.015	.016	-.080	-.959	.339
R^2	0.12					
ΔR^2	0.12					
Step 2	Fantasy	.053	.133	.020	.399	.691
	Perspective-Taking	.352	.162	.122*	2.18	.031
	Empathic Concern	1.39	.167	.483***	8.34	<.001
	Personal Distress	-1.11	.175	-.382***	-6.37	<.001
R^2	.667					
ΔR^2	.655					

Note

*$p < .05$, ***$p < .001$

To compare the effect sizes of the components of dispositional empathy, we examined the beta coefficients which are standardized values of the strength of the relation between the predictors and the perceived caregiver-child interactions. These provided an indication of the relative contribution of each predictor to the criterion variable. Beta is mostly used to assess variable importance in multiple regression analysis (Nathans, Oswald & Nimon, 2012). The results showed that empathic concern was the strongest predictor ($\beta = .48$, $p < .001$) followed by personal distress ($\beta = -.38$, $p < .001$) and then perspective-taking ($\beta = .12$; $p < .031$). These results were consistent with our prediction that empathic concern will account for more variance in the perceived caregiver-child interactions than fantasy, perspective-taking and personal distress.

Moderation effects of age and the personality dimensions

The second major objective in this study was to examine the moderator effects of age and personality (neuroticism, agreeableness, and openness). We created an interaction term, which is a product of the independent variable and each of the moderator variables (MVs). The moderated analysis then follows a hierarchical multiple regression in which the predictors are entered at the first step, followed by the moderators at the second step and the interaction term at the third and final step.

Moderating effect of age

The first moderated regression analysis tested the effect of age (moderator variable). The control variables, age excepted, were not included in this analysis because they do not account for significant variance in PCCI. For the sake of parsimony, a score on empathy was obtained by summing up the four sub-scales (fantasy, perspective-taking, empathic concern, and personal distress). The results of the moderation analysis are summarized in Table 2.

Again, we found significant overall regression results. Dispositional empathy significantly predicted PCCI (β = .279; p>.001). Age, entered at the second step, also accounted for significant variance in the perceived caregiver-child interactions showing higher PCCI with increasing age (β = .472; p>.001). However, in step 3, the interaction variable did not significantly predict PCCI. Therefore, the moderating effect of age (dispositional empathy and age) did not account for any more variance in perceived caregiver-child interactions.

Table 2: The moderation effect of age on the relationship between dispositional empathy and PCCI

	Variable	B	S.E.	**β**	t	p
Step 1	Dispositional empathy	.415	.116	.279**	3.585	< .001
R^2	.078					
ΔR^2	.078					
Step 2	Age	.787	.114	.472**	6.917	< .001
R^2	.300					
ΔR^2	.222					
Step 3	Dispositional empathy X Age	.027	.015	.123	1.818	.071
R^2	.315					
ΔR^2	.015					

Moderating effects of personality

We were also interested in the moderating effect of personality (openness, agreeableness, and neuroticism) on the relationship between dispositional empathy and PCCI. Consistent with our previous analysis, dispositional empathy was entered at the first step, the three personality dimensions were entered in step 2 and the interaction between dispositional empathy and personality dimensions were entered in step 3. We found significant effects for dispositional empathy (β = .279, p < .001), agreeableness (β = .275, p < .001), and neuroticism (β = -.684, p < .001) on PCCI but not openness. We also found that neuroticism marginally moderated the effect of dispositional empathy (β = -.121, p < .013) but not openness and agreeableness (see Table 3).

Table 3: Summary of hierarchical multiple regression analysis for the moderation of personality dimensions on the relationship between dispositional empathy and PCCI

Variable		B	S.E.	β	*t*	*p*
Step 1	Dispositional empathy	.415	.116	.279**	3.585	< .001
R^2	.078					
ΔR^2	.078					
Step 2	Agreeableness	.429	.075	.275**	5.729	< .001
	Openness	.049	.129	.018	.382	.703
	Neuroticism	-.627	.045	-.684**	-13.929	< .001
R^2	.720					
ΔR^2	.643					
Step 3	Dispositional Empathy X Openness	-.009	.015	-.027	-.588	.558
	Dispositional Empathy X Agreeableness	-.007	.009	-.041	-.789	.431
	Dispositional Empathy X Neuroticism	-.012	.005	-.121*	-2.50	.013
R^2	.726					
ΔR^2	.006					

Discussion

The association between dispositional empathy and caregiver-child interaction are well known (Kunyk & Olson, 2001). What is not adequately explored are the effects of age and personality of caregivers on this relationship particularly among LMIC. Our results supported our first objective and for the hypothesized moderated effects of neuroticism.

Dispositional empathy and perceived caregiver-child interaction

Dispositional empathy is strongly related to caregiver-child interaction. With the respondents predominated by females (95%), it is difficult to explain this outcome without resort to gender. In Ghana, as is characteristic of other countries, caregiving in ECCE centers are dominated by females. Females have been found to report higher levels of empathy than males (Clarke, Marks, & Lykins, 2016; Rueckert & Naybar, 2008; Willer, Wimer & Owens, 2015). Similar findings have been reported in brain studies showing a difference between males' and females' expression of empathy (Christov-Moore, et al. 2014; Schulte-Rüther, et al. 2008). Schulte-Rüther, et al. (2008) found that while expressing empathy, females make more use of their mirror neurons (brain cells responsible for empathy) than males, a finding that suggests there is imitation, or modelling involved in empathic behavior.

Socialization patterns in non-Western cultures tend to emphasize gender role differentiation by encouraging females to perform more care-giving roles. In Ghana for

example, it has been reported that not only are females inclined to provide care but that individuals show gender role disparities from adolescence (Adomako Ampofo, 2001; Akotia & Anum, 2012). The experience females acquire because of regularly engaging in nurturing tasks most likely enhances their empathic behavior.

Empathic concern was the strongest contributor to perceived caregiver-child interaction. Empathic concern is characterized by feelings of warmth and concern for others. Females more easily express warmth and sensitivity in social interactions. Females have also been reported to exhibit a higher level of emotional responsiveness than males (Rueckert, Branch & Doan, 2011). In Ghana, women are stereotyped to be sensitive and more emotionally responsive (Gyekye, Arthur & Dankwa, 1996). This is not an isolated finding. Lin and McFather (2012) found that preschool teachers who reported more distress during the empathy process were significantly more likely to respond to children's cries with hostility. In other words, positive emotionality is more associated with positive interaction.

Debates about empathy in interpersonal interactions have focused on whether the affective component or the cognitive component improves social interactions (Davis, 1983). Findings in the current study lend support to the affective component of dispositional empathy more likely predicting the quality of interactions between caregivers and children in ECCE centers. Both empathic concern and personal distress, which make up the affective component, were significantly associated with perceived caregiver-child interaction. However, empathic concern was found to increase caregivers' belief in appropriate care-giving behaviors, while personal distress was found to decrease their belief in appropriate care-giving behaviors.

Perspective-taking, a cognitive component of empathy, influenced perceived caregiver-child interaction positively but was the least significant predictor of perceived caregiver-child interaction. Fantasy dimension, another component of cognitive empathy, was not significant in predicting perceived caregiver-child interaction independently. These support the minimal role that cognitive empathy plays on perceived caregiver-child interaction.

Consistent with this observation, we also found that empathic concern increased caregivers' positive perceptions of caregiver-child interaction more than perspective-taking did. Similar findings have been reported by Quan-McGimpsey et al. (2015) who reported that early childhood educators believe that it is more important to connect emotionally with the children. This makes their care functional (exchange of caregiver-child assistive behaviors) and consensual (perceived agreement between caregiver and child).

Age does not moderate dispositional empathy and perceived caregiver-child interaction but personality does

One of the goals of this study was to examine linear (nonlinear) effect of age on dispositional empathy and perceived caregiver-child interaction. We did not find the

expected moderating effect for age although this has been explored successfully in previous studies (e.g., Marshall, 1996). Some have suggested that empathic concerns decrease with age as effects of adverse experiences and life stresses accumulate overtime (Pearlin & Skaff, 1996) and therefore it might be useful to examine age effects within specific age bands. An opposing view however may support the idea that in Ghana, like in other more collectivist societies, there may be a lack of sufficient cohort differences between older and younger adults because individuals across the age divide share similar characteristics such as dependence on wide social support networks. This engenders a common concern for each other and reliance on each other, that enables many Ghanaians, both old and young, to rely immensely on social support systems or naturally show care and provide support (Gruhn, et al. 2008; Nukunya, 2003).

Another major objective in this study was to examine the moderating effects of personality on the relationship between dispositional empathy and perceived caregiver-child interaction. Only neuroticism moderated the relationship among the caregivers. The effect of neuroticism showed a less positive social interaction with children driven possibly by a need of avoiding conflicts with their own peers during social interactions. Individuals high on neuroticism may be attracted to ECCE centers because of the realization that young children are usually less assertive than their own peers and therefore may not pose a threat to them by challenging their expression of neuroticism characteristics.

It is important to note that findings from the study also showed a high correlation between the personal distress dimension of dispositional empathy and neuroticism. Earlier studies have suggested that emotional stability is associated with high quality interactions between ECCE caregivers and children (e.g., Lin & McFather, 2012; Quan-McGimpsey, et al. 2015; Sarıçam, Çelik & Halmatov, 2012). Neuroticism is however characterized by anxiety, hostility, depression, self-consciousness, and impulsivity which cause individuals to be preoccupied with their own anxiety (Eysenck, 1970). ECCE caregivers who reported high levels of neuroticism are likely to be preoccupied with their own worries and anxieties, and therefore are more easily distracted from the task of caring for the children.

Again, individuals high on neuroticism are likely to experience more interpersonal stressors and are more inclined to respond to these stressors with a stronger negative affect (Gunthert, Cohen & Armeli, 1999). It may be implied that caregivers who score high on neuroticism may respond more negatively to the presence of stressors that accompany the task of taking care of young children in ECCE settings. Thus, the negative relationship between neuroticism and perceived caregiver-child interaction is due possibly to a susceptibility to stressors in ECCE centers.

Limitations and recommendations

In the current study, the quality of caregiver-child interaction was inferred from the caregivers' reported perceived interactions. A major concern of self-report measures is

the likelihood that subjectivity and social desirability on the part of the participant has the potential to bias responses. The findings should therefore be interpreted with the knowledge that caregivers reported their opinions about their perceived interactions with the children, and not necessarily what actually happens on daily basis. That notwithstanding, an assessment of the instruments used in the study showed very good internal consistencies. In future studies, researchers may consider using direct observation in measuring the quality of interactions between ECCE caregivers and the children. Using this research strategy can overcome subjectivity on the part of the caregivers and provide the researcher with an objective assessment of how the caregivers interact with the children. Secondly, it is possible that the beliefs and intentions of ECCE caregivers are to some extent, influenced by their own experiences during their childhood and schooling. However, in the current study, the focus was on examining the predictive ability of dispositional empathy on perceived caregiver-child interaction and the moderating effects of age and personality. Antecedent influences of perceived caregiver-child interaction were therefore not explored because of their tendency to complicate the interpretation of the findings. It is probable that exploring the influences of caregivers' childhood experiences on their perceived interactions with children could have provided some explanations about the nature of their beliefs and intentions about appropriate caregiving behaviors. Given that qualitative techniques are becoming increasingly important methods in studying social interactions, interviews and observations may be used by future researchers in exploring caregivers' perceived interactions with the children in their care. The use of interviews will most likely elicit responses from the caregivers that will provide in depth information on how their beliefs and intentions towards caregiver-child interaction have evolved over time.

Having clarified the nature of the relationships among the variables examined in this study, future researchers may consider an empirical investigation into the possible influences of caregivers' emotional intelligence and cultural adherence on their dispositional empathy. This will further advance the understanding of some antecedents of caregivers' empathy levels and empathic dispositions. Finally, in the current study, the aim was to examine the empathic dispositions of ECCE caregivers, in order to observe changes in perceived caregiver-child interaction. However, there is the possibility that the consideration of some antecedents of empathy, such as emotional intelligence and cultural adherence, could have provided some insight into some personal and social factors that may facilitate or inhibit the development of empathy among ECCE caregivers.

Conclusion

The long-term effects of high-quality interaction between young children and their caregivers cannot be underestimated. Understanding the mechanisms involved in this social interaction and teachers' consciousness of their own inclinations are very important in enhancing positive caregiver-child interaction and experience. Our research findings

reinforce known associations between dispositional empathy and perceived caregiver interaction. More importantly, we showed the influence of high caregiver neuroticism in reducing positive caregiver-child interaction. This has long term consequences for child cognitive and emotional development. This should foster stronger ECCE policies in countries where there is inadequate regulation, that should include monitoring education of teachers, child outcomes and strengthen existing regulations about qualification and licensing. The findings of this study should be particularly useful to trainers of early childhood educators in preparing prospective ECCE caregivers, as well as reinforcing positive classroom interactions between children and caregivers on the job.

Funding details

There is no specific funding for this research

Disclosure statement

The authors declare there is no conflict of interest in the conduction of this study and the writing of the manuscript

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