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Sažetak

S obzirom na važnost i ulogu humora u odgojno-obrazovnom radu s djecom, a iznimno mali broj istraživanja koji postoji na ovome području, temeljni je cilj rada ispitati smisao za humor i stavove prema važnosti humora u radu odgajatelja. U istraživanju je sudjelovalo 202 odgajatelja (199 žena) iz 13 dječjih vrtića Primorsko-goranske županije. Primijenjena je skala samoprocjene pod nazivom Skala smisla za humor i anketa o stavovima prema važnosti humora u radu s djecom. Provedena faktorska analiza Skale smisla za humor na osnovne komponente s Oblimin rotacijom potvrdila je pretpostavljenu 6-faktorsku strukturu koja objašnjava 73,293 % varijance. Općenito, utvrđeno je da odgajatelji imaju prosječni smisao za humor. Također, u anketi stavova o važnosti humora u radu s djecom, odgajatelji su pokazali i pozitivne i negativne stavove. Korelacijske su analize ukazale na to da s većim smislom za humor raste i pozitivnost stavova o važnosti humora u radu, dok značajnih povezanosti sa socio-demografskim varijablama nije bilo. Temeljem istraživanja moguće je zaključiti da odgajatelji imaju prosječan smisao za humor i nemaju jednoznačno određen stav prema važnosti humora u radu s djecom, što ima značajne implikacije za njihov profesionalni razvoj.

Keywords: *odgajatelj, smisao za humor, važnost humora u radu s djecom, ustanova za rani i predškolski odgoj i obrazovanje*

Uvod

"The place of humor in teaching is a high place because it encourages a disposition to say yes to life." (A. L. Bradford, 1964, p. 69)

Kada razmišljamo o vlastitom osobnom i profesionalnom životu, vrlo često ga ne možemo zamisliti bez smijeha, radosti i vedrine. Humor u životima ljudi zauzima vrlo važno mjesto, što je suvremena pozitivna psihologija prepoznala u područjima socijalnih vještina, kreativnosti, strategija suočavanja sa stresom, utjecaju na imunološki sustav i brzem oporavku od bolesti i terapiji (Rljavec, Miljković i Brdar, 2008). Stoga je razumljivo zašto se humor ili smisao za humor smatra jednom od ključnih ljudskih vrlina unutar VIA klasifikacije pozitivnih osobina (Peterson i Seligman, 2004). Općenito, očituje se u vedrom, neozbiljnom, zaigranom raspoloženju većinu vremena, a osoba koja ima smisao za humor vrlo je poželjna u društvu. Posebice je važan u trenucima stresa ili negativnih životnih događaja, kada predstavlja osobnu vještinu koja omogućava prevladavanje stresnih situacija. Humor je značajno pozitivno povezan s velikim brojem pozitivnih ishoda uključujući bračno zadovoljstvo, prilagodbu fizičkim nedostacima, opće životno zadovoljstvo, suočavanje sa stresom, preživljavanje bolesti i prevenciju samoubojstva (Reff, 2006).

Osim navedenoga, utvrđeno je da humor ima neizostavno važno značenje i mjesto u nastavi (Krnjajić, 2006) te ostalim odgojno-obrazovnim procesima (Zarevski, 2002). Humor pozitivno utječe na pažnju i povećava motivaciju na nastavi pri čemu dolazi do značajnoga unapređenja procesa učenja. Značajno oslobađa i potiče kreativnost i fleksibilno mišljenje, ublažava stres i napetost te unapređuje odnos između učenika i učitelja. Korisna metoda za stvaranje humora je kreiranje osobnoga odmak, a odnosi se na sposobnost osobe da se postavi izvan situacije, da se ne identificira sa situacijom i da postane nepristrani promatrač. Na ovaj se način može doći do više razine divergencije u mišljenju te novijih i originalnijih rješenja nekog problema, jer je odmakom omogućena šira i potpunija perspektiva. Drugim riječima, kreiranjem odmak moguće je sagledati smješniju ili apsurdniju stranu onoga s čime smo zaokupljeni, kao u životu, tako i u nastavi (Krnjajić, 2006). S obzirom da se odgojno-obrazovni rad temelji i izvodi na osnovi različitih međuljudskih odnosa, svrha humora jest facilitiranje tih odnosa i poboljšanje postojeće komunikacije među sudionicima, tj. djecom i odgajateljima, učiteljima, profesorima. Samim time, moguće je poboljšati ozračje u skupini/razredu, posebice kada je riječ o nekim ozbiljnim temama. Također, humor se nerijetko koristi za motiviranje djece, mladih i studenata u procesu učenja pri savladavanju određenoga dijela gradiva, kao i u situacijama u kojima su dominantne poteškoće u djetetovu ponašanju (Matijević, 1994; Powers, 2005).

Premda su razlozi koji stoje u podlozi važnosti humora, kako u svakodnevnom životu, tako i u odgojno-obrazovnom radu s djecom, mladima i studentima, više nego očigledni te empirijski potvrđeni u različitim istraživanjima, o humoru se vrlo malo govori posebice u edukacijskom kontekstu. Stoga je ovaj rad usmjeren na promišljanje o humoru kao jednoj od važnih odrednica ranoga učenja i poučavanja te analizi smisla za humor kod odgajatelja preškolske djece i njihovim stavovima o važnosti upotrebe humora u radu s djecom predškolske dobi.

Što je humor? – Suvremeni teorijski modeli

S obzirom da je humor vrlo složen fenomen, postoje mnogobrojne definicije i teorijski modeli koji ga nastoje razumjeti, kako unutar pozitivne psihologije, tako i u okviru različitih znanstvenih disciplina (Reff, 2006). Polazeći od biološke perspektive, humor se javlja onda kada se pojave neurološki uvjeti u kojima se čovjek smije spontano ili neprimjereno. Evolucijska perspektiva ističe adaptivnu vrijednost humora u ljudskome životu, a antropološka njegovu karakteristiku univerzalnosti s obzirom na ljudske osobine. Naposljetku, psihološka perspektiva u početku se značajno oslanjala na definiranje humora iz prizme kliničke psihologije, gdje je isti definiran kao zreo i prilagodljiv obrambeni mehanizam. Danas, u okviru pozitivne psihologije, humor se također definira kao zaštitni čimbenik u razvoju i prilagodbi osobe, ali i kao osobina ličnosti, posebna vrlina, sposobnost, stav, navika te specifičan pogled na svijet (Martin, 2007). Pored *auctoritas, clementia, dignitas, firmitas, frugalitas, gravitas, honestas, humanitas, industria, pietas, prudentia, salubritas, severitas and veritas*, humor (lat. *Comitas*) se kao jedna od najvažnijih ljudskih vrлина spominje još u starom Rimu (prema Harris, 2005). No, detaljniji uvid u definiranje i razumijevanje humora, odvija se u 19. stoljeću, kada se humor shvaća kao sposobnost pojedinca za percepciju i razumijevanje vlastitoga i tuđega humora. Osim toga, smisao za humor je osobina koja je najviše vezana za životno zadovoljstvo, spada pod vrlinu transcendentnost koja uključuje osobine povezane sa širim univerzumom te koje daju smisao životu (Beermann i Ruch, 2009).

Eysenck (1972) ističe da onaj pojedinca koji ima izražen smisao za humor jest osoba koju: a) svi poznaju kao glavnog zabavljača, b) koja se puno smije i lako ju je zabaviti i c) koja ima zajedničke šale kojima se svi smiju te se kroz humor razumije s drugim ljudima. Istraživači Hehl i Ruch (1985) pružili su nešto širu definiciju smisla za humor te ga definiraju kao karakteristiku koja se sastoji od: navike u ponašanju koja je karakteristična po učestalom smijanju, pričanju šala i zabavljanju drugih ljudi; sposobnosti kreiranja humora i šala; osobine ličnosti koja se očituje kroz čestu vedrinu, dobro raspoloženje i veselje; pozitivnoga i otvorenoga stava prema humoru i humorističnim ljudima; pogleda na svijet kroz zaigranost i neozbiljnost te humora koji se koristi pri rješavanju životnih problema, tj. humora kao obrabenoga mehanizma.

Reakcije koje uzrokuje humor, a to su veselje, vedrina ili radost i smijeh, više su nego poželjne u ljudskom svakodnevnom životu i radu. Jednako tako i u procesu učenja i poučavanja, jer se humor vrlo često obilježava kao ona nastavna metoda koja služi za razvoj pozitivnoga okruženja za učenje (Kher, Molstad i Donahue, 1999). U situacijama humora, stvaraju se emocije koje imaju pozitivan učinak na organizam, veselje predstavlja emocionalni odgovor, a smijeh predstavlja refleksivnu reakciju na humor (Torradella i Corrales, 2009). U svojoj opsežnoj knjizi o *Psihologiji humora*, Martin (2007) predstavlja integrativni model humora, temeljem kojeg je evidentno koliko je humor zapravo složen fenomen. Primjerice, proučava se unutar kognitivne psihologije s obzirom na to da je iznimno važno proučavati kognitivne procese koji mu stoje u podlozi, kao što su: percepcija, razumijevanje, poštovanje i kreiranje humora. Interpersonalna funkcija humora u dijadnim i grupnim odnosima više je nego značajna za područje socijalne psihologije. Razvojna je psihologija fokusirana na to kako humor utječe na razvoj djece, kako se humor i smijeh razvijaju razvija tijekom života. Kao što će biti vidljivo u prezentiranom temperamentalnom modelu smisla za humor, psihologija ličnosti je usmjerena na propitivanje individualnih razlika u smislu za humor te u kakvom su odnosu s drugim osobinama ličnosti. Fiziološke osnove i efekti humora te moždani centri humora istražuju u okviru biološke psihologije. Naposljetku, humor ima svoje nezamjenjivo mjesto u psihološkoj dobrobiti ljudi te je iznimno važan na očuvanje mentalnoga zdravlja. Kontekstualni pristup proučavanju psiholoških efekata humora istražuje humor u različitim kontekstima: psihoterapiji, radnim organizacijama, edukaciji, itd. Stoga, ističe Martin (2007), da bismo dobro

razumjeli humor, neophodno ga je sagledati integrativno, tj. iz svih navedenih perspektiva. Zbog dominacije u relevantnoj literature, prikazan je temperamentalni model Rucha i

suradnika (Ruch i Carrell, 1998), a zbog potreba ovoga istraživanja McGhee-ov višedimenionalni model smisla za humor (2010).

Ruch i suradnici (Ruch, Köhler i Thriel, 1997; Ruch i Carrell, 1998; Ruch i Hofmann, 2012) povezujući određene bihevioralne karakteristike i karakteristike temperamenta sa smislom za humor postavili su tzv. temperamentalni pristup humoru. Ističu da određene karakteristike temperamenta olakšavaju, a druge otežavaju izražavanje humora. Primjerice, vedro i dobro raspoloženje, odnosno vedrina facilitiraju izražavanje humora, dok negativno raspoloženje i ozbiljnost otežavaju, što se povezuje s nedostatkom smisla za humor kod te osobe. Vrsta raspoloženja i smisao za humor u značajnoj su interakciji, pri čemu je značajna determinanta i jednog i drugog društveni kontekst. Korelacijskim su istraživanjem Hirsch i suradnici (2010) utvrdili da povećanjem dobroga i vedroga raspoloženja te smanjenjem razine ozbiljnosti dolazi do značajnoga povećanja smisla za humor. Ruch i Carrell (1998) ističu postojanje povezanosti između humora i veselja, što se u okolini prepoznaje kao humorističan stav ili pogled na svijet te osobe koja razumije ljudske mane. Također, ističu da je humor mješavina veselja, vedrine i radosti kao dijelova temperamenta i ozbiljnosti kao mentalne sposobnosti, što znači da osoba ne ismijava sebe ni druge ljude, već da ima realan i humorističan pogled na svijet. Pritom naglašavaju da je potrebno odvojiti afektivne od mentalnih faktora u smislu za humor.

Budući da je relevantno za ovo istraživanje, važno je za prikazati i McGheeov (2010) višedimenionalni model smisla za humor u okviru kojeg se smisao za humor definira kao određeni oblik igre s idejama. Ovaj je model razvijen temeljem njegova praktičnoga rada s ljudima koji nastoje razviti i unaprijediti svoj smisao za humor u *Programu za razvoj sedam humorističnih navika* (eng. *7 Humor Habits Program*, McGhee, 2010). Pritom razlikuje dvije nezavisne komponente smisla za humor: razigranost i ozbiljnost. Drugim riječima, osoba koja nema razvijen smisao za humor, koja je preozbiljna, određene će događaje percipirati kao nešto što je zanimljivo, strašno, zagonetno, zastrašujuće, a ne kao nešto što je smiješno. Općenito, ljudi mogu biti vrlo dobri u uočavanju apsurdnosti, nedosljednosti i ironije života, no samo oni pojedinci koji su psihički razigrani bit će sposobni u tim situacijama pronaći humor budući da je razigranost osobe temelj za postojanje smisla za humor. Pored ove dvije komponente, smisao za humor sastoji se i od specifičnih sposobnosti i vještina koje se mjere Skalom za mjerenje smisla za humor (eng. *Sense of Humor Pre-Test*, McGhee, 2010, 2012), a odnose se na: smijeh, verbalni humor, pronalaženje humora u svakodnevnom životu, smijanje samome sebi i suočavanje sa stresom kroz humor.

Humor u vrtiću – humor u radu odgajatelja

Premda se odgojno-obrazovna ustanova teško može zamisliti bez smijeha djece i mladih, ne postoji veliki broj istraživanja koji je usmjeren na proučavanje uloge humora u odgojno-obrazovnom radu s djecom. Posebice je to slučaj s kontekstom ranog i predškolskog odgoja i obrazovanja. S obzirom da je humor najrealnija karakteristika ljudi, a poučavanje bi trebalo biti što realnije jer je tako bliže stvarnom, svakodnevnom životu, a time i kvalitetnije (Bradford, 1964), upravo je doprinos ovoga rada senzibilizirati stručnjake za važnost humora.

Kako bi se kroz odgojno-obrazovnu ustanovu prožeo humor, potrebno je znati da je humor zdrava hrana za djetetov mozak, da promatranje, dokumentiranje djetetova smijeha u različitim situacijama omogućuje odgajatelju razumijevanje djetetova razvoja i učenja, da je humor važan za djecu koja imaju poteškoća u govornom razvoju, da je korisna strategija za motiviranje djeteta, da potiče kognitivno razumijevanje djeteta, da pruža kvalitetno učenje prožeto zabavom i veseljem, da iskazuje kompetencije i uspjeh i da može imati i negativne

učinke koji uključuju ismijavanje drugih. Osim što humor uvelike utječe na djetetov razvoj da se izgradi u pozitivno odgovorno osobu koja se lakše susreće s izazovima, omogućuje pozitivne međuljudske odnose, pozitivnu radnu atmosferu, profesionalni razvoj odgajatelja te povezuje

odgojno-obrazovnu ustanovu u složnu i veselu „obitelj“. Budući da na svim radnim mjestima, pa tako i u odgojno-obrazovnoj ustanovi, postoje određene stresne situacije, negativno rješavanje konflikata između zaposlenika, nesporazumi u komunikaciji, napeta radna atmosfera, u sljedećim poglavljima navest će se humoristične strategije za postizanje pozitivne komunikacije, radne atmosfere, suočavanje sa stresom te na koje načine odgajatelji mogu utjecati na dječji i osobni razvoj humora kako bi odgojno-obrazovnu ustanovu učinili mjestom veselog i ugodnog življenja djece i odraslih (Smidl, 2014).

U kontekstu ranoga i predškolskog odgoja i obrazovanja humor poboljšava komunikaciju, radnu atmosferu i kreativnost odgajatelja i djece. Pozitivna suradnja između djelatnika odgojno-obrazovne ustanove uključuje kvalitetne međuljudske odnose na koje utječe pozitivna komunikacija, radna atmosfera i radna kreativnost (Tatalović Vorkapić & Vujičić, 2013). Hoće li se odgojno-obrazovna ustanova razviti u profesionalnu i suvremenu ustanovu odgoja i obrazovanja, u dječju kuću koja osigurava prihvatanje, uvažavanje i poštovanja svake osobe ako ne djeluje pozitivna komunikacija, radna atmosfera i radna kreativnost? Humor utječe i poboljšava komunikaciju svih djelatnika tako da se koristi u situacijama kada se želi prenijeti osjetljiva ili neugodna poruka na dobroćudan način (McGhee, 2011a; McGhee, 2011b).

Humor predstavlja sredstvo komunikacije i povezivanja ljudi, poboljšava međuljudske odnose, stvara kohezivnost grupe, olakšava komunikaciju te smanjuje napetost i socijalnu distancu između ljudi. Stoga, humor predstavlja jednu od najvažniji vještina u interakciji, podizanju radne atmosfere i radne kreativnosti. Vesela radna atmosfera prožeta smijehom omogućuje odgajatelju da se profesionalno razvija, razumije djecu iz više perspektiva i da konstruira novu suvremenu sliku o djetetu (Smidl, 2014). Nadalje, vesela radna atmosfera uključuje temeljne norme kolegijalnosti, unapređivanje i kontinuirani rad, oblikovanje učenja, sreće i humora, profesionalni razvoj, uspješan kurikulum i pozitivna postignuća polaznika. Konstruiranje vesele radne atmosfere uključuje modificiranje odgojno-obrazovnog okruženja na humorističan način (napraviti „humoristični centar“ ili „centar smijeha“), planiranje i poticanje humorističnih aktivnosti te prijenos negativno-osjetljive poruke na humorističan način. Da bi se ostvarili navedeni postupci, potrebno je da odgajatelj stvori humoristične navike koje omogućuju konstruiranje vlastitoga verbalnog humora, a njihov krajnji cilj je kreiranje vlastitih šala, poticanje i usavršavanje verbalnoga humora usred razgovora. Razvoj i usavršavanje humorističnih navika omogućit će odgajatelju da prepozna i potiče dječji humor, da se suoči sa stresnim situacijama, da konstruira veselo i radno okruženje i da razvija svoju kreativnost. Razvoj humorističnih navika uključuje pamćenje i prepričavanje viceva tako da osoba ponovi vic u sebi prije nego što ga želi ispričati, da se ne smije vlastitoj šali unaprijed, da ne najavljuje vlastitu sposobnost pričanja viceva i da ne odugovlači. Osim pričanja viceva humoristične navike uključuju gledanje smiješnih filmova/emisija, čitanje humorističnih knjiga ili časopisa. Vesela radna atmosfera, kreativnost i humor u pozitivnoj su korelaciji. Razvojem smisla za humor razvija se kreativnost osobe iz toga razloga što ljudi koji imaju veći smisao za humor imaju i tendenciju da su više kreativni, manje kruti, spremni razmotriti i prihvatiti nove ideje/metode te su na taj način i spremni modificirati svoju radnu atmosferu (McGhee, 2012).

Osim toga, kao i u drugim radnim okruženjima, humor služi i kao adekvatna strategija suočavanja s odgajateljskim stresom. Stres se definira kao neugodno iskustvo koje aktivira negativne emocije poput ljutnje, napetosti, anksioznosti i depresije. Svaki posao ima svoje stresore, pa tako odgajateljska profesija uključuje stresore poput vremenskoga pritiska u obavljanju određenih ciljeva i zadaća, zadovoljavanja djetetovih potreba, suočavanja s poslovima izvan svoje profesije, zadovoljavanja osobnih potreba, interakcije s roditeljima,

interpersonalnih odnosa i stalne prilagodbe promjenama predškolskoga kurikula (Živčić-Bećirević i Smojver-Ažić, 2005; Tatalović Vorkapić i Lončarić, 2013). Humor je koncipiran tako da djeluje na različite načine kao regulator stresa iz dvije perspektive. Prva perspektiva odnosi se na definiranje humora kao osobine ličnosti koja zaštićuje osobu od razvoja i pojave stresa.

Druga perspektiva odnosi se na definiranje humora kao vještine suočavanja sa stresom. Obje perspektive definiraju humor kao emocionalnu strategiju prevladavanja stresnih situacija (Thomas, 2000). Uporaba humora kao oruđa u regulaciji emocija može se naučiti uz pomoć Programa za razvoj sedam humorističnih navika (McGhee, 2010) koji uključuje određene humoristične radnje kojima se mogu svladati svakodnevni stresovi s kojima se odgajatelji susreću. Provođenjem navedenoga programa mogu se izgraditi navike i vještine svladavanja stresa i razvijanja smisla za humor pomoću specifičnih vježbi i aktivnosti koje uključuju: uranjanje u humor; njegovanje vlastitoga razigranog stava; često smijanje od srca; vježbanje verbalnoga humora; pronalaženje humora u svakodnevnim situacijama; smijanje samom sebi te pronalaženje humoristične strane u trenutnim stresnim situacijama. *Program 7 humorističnih navika* omogućuje odgajateljima razvijanje navika i vještina koje može upotrijebiti u stresnim situacijama na poslu i u privatnom životu. Također, navedeni pristup poboljšava smisao za humor te omogućava pojedincu zdravo preživljavanje u suvremenom svijetu (McGhee, 2012; McGhee, 2013).

Dječji humor definira se kao osobina i kao stil duhovitoga ponašanja, a njegov razvoj ovisi o temperamentu djeteta, utjecaju roditelja, okoline i o djetetovim iskustvima. Dijete najbolje uči kroz igru uz smijeh i stoga je potrebno osigurati djetetu veselu atmosferu i okruženje u kojem će moći razvijati svoj humor koji utječe na razvoj njegovih kognitivnih vještina, na stvaranje snažnijih i čvršćih odnosa s roditeljima i odgajateljima, na poticanje interpersonalne vještine, pomoć pri suočavanju s bijesom i ljutnjom, poticanje razvoja samopoštovanja, poticanje predčitačke aktivnosti i intelektualne vještine, poticanje kreativnosti i pozitivnoga mentalnog stanja djeteta (McGhee i Frank, 2013).

Pri definiranju i poticanju dječjeg humora važno je znati njegov razvoj, u kojem smjeru se razvija. Faze razvoja dječjega humora temelje se na Piagetovoj teoriji razvoja. Prema navedenoj teoriji humor započinje već s osamnaest mjeseci djetetova života što i označuje prvu fazu razvoja dječjeg humora, a očituje se kada se kod djeteta razvije sposobnost mijenjanja stvari i zamišljanje objekata na drugačiji način. Druga faza razvoja humora započinje s dvije godine, kada dijete koristi jednostavne verbalne šale, kada dijete nema potrebu koristiti objekte kako bi se šalilo već samo stvara svoj humor bez pomoći drugih rekvizita. Treća faza razvoja humora započinje s tri godine kada dijete počne koristiti vizualni humor tako da koristi humor u situacijama koje mu izgledaju poznato, kada čini humoristične stvari sa svojim roditeljima, u poznatoj okolini. Četvrta faza razvoja humora započinje sa šest godina kada dijete ima sposobnost dubljega razumijevanja humora, odnosno da razumije jednostavne viceve i shvaća dvosmisleno značenje riječi. Navedene faze razvoja dječjega humora mogu pomoći odgajateljima pri kreiranju aktivnosti i situacija koje će poticati dječji humor s obzirom na pozitivne učinke humora u djetetovom razvoju i na činjenicu da je humor vještina koja se razvija i uči. Uvriježeno je mišljenje da je humor genetski uvjetovan, no nije znanstveno utemeljeno, već je on urođeni društveni fenomen koji se može poticati, razvijati i naučiti u poticajnoj okolini (Lyon, 2006).

Poticanje i razvijanje smisla za humor kod djece uvelike ovisi o tome u kojoj je mjeri smisao za humor prisutan kod odgajatelja. Kada dijete vidi odgajatelja kako uživa u smijehu i humoru, dobiva jasnu informaciju da su takve emocije društveno prihvatljive i tako se potiče izražavanje njegova humora (Lyon, 2006). Navode se četiri uloge odgajatelja koje su nužne za poticanje razvoja dječjega humora: odgajatelj kao uzor duhovitosti, odgajatelj koji shvaća dječji humor ozbiljno, odgajatelj koji uči djecu da su odrasli i djeca smiješni i odgajatelj kao kreator okruženja bogatog humorom. Odgajatelj kao uzor duhovitosti predstavlja odgajatelja koji se ponaša vrlo spontano, problemske situacije rješava humorom, izmišlja smiješne priče,

dočekuje i prati djecu s osmijehom na licu, ne ohrabruje podrugljive šale već uči djecu da je humor oblik društvene zabave, a ne oblik podrugivanja drugima. Odgajatelj koji shvaća dječji humor ozbiljno predstavlja odgajatelja koji ohrabruje svaki način izražavanja djetetova humora, pohvaljuje dijete za njegov humor, za njegovu kreativnost, izmjenjuje s djetetom humor kako bi otkrio u kojoj je mjeri razvijen njegov humor. Odgajatelj koji uči djecu da su odrasli i djeca smiješna predstavlja odgajatelja koji potiče djecu da iznose svoje šale te smatra da su djeca društveno-zabavna bića. Odgajatelj kao kreator okruženja bogatog humorom predstavlja odgajatelja koji zajedno s djecom izrađuje plakate o humoru, bilježi djetetove izreke o humoru, potiče djecu na gradnju smiješnih konstrukcija, konstruira opušteno okruženje u kojem će se djeca osjećati prirodno, razigrano i motivirano za ostvarivanje svojih ideja i potreba (Matijević, 1994; Tatalović Vorkapić i Srok, 2014).

McGhee (2002) navodi sedam uloga odgajatelja u podržavanju dječjih vještina humora. Prva uloga odgajatelja je da podrži djetetovu igru, budući da humor proizlazi iz djetetove igre, predstavlja intelektualni oblik igre jer podupire vrijednost igre, a igra podupire humor. Smatra kako se podržavajući djetetovu igru, podržava i djetetov humor. Druga uloga odgajatelja označuje podržavanje pokušaja dječjeg humora iako nije smiješan, potrebno je da odgajatelj podržava pokušaje humora tako da se uključi u djetetovu humorističnu priču sa svojim humorom, a da se djetetov humor ne omalovažava ili ne prihvata. Treća uloga odgajatelja je da pruži model za poticanje i razvijanje dječjeg humora koji uključuje korištenje humora u svakodnevnim i stresnim situacijama. Četvrta uloga odgajatelja znači smijanje samome sebi što uključuje iznošenje šala na vlastiti račun bez pretjerivanja. Peta uloga odgajatelja je da pruži djetetu humor s obzirom na njegov kognitivni razvoj što uključuje korištenje humora koji dijete razumije. Šesta uloga odgajatelja znači poštovanje djetetova humora jer kao što je dijete jedinstveno biće tako je i njegov smisao za humor jedinstvena vještina i osobina. Sedma je uloga odgajatelja da djetetu objasni „loše strane“ humora kako ne bi došlo do negativnih štetnih posljedica tako da potiče djetetove socijalno-emocionalne vještine i pozitivan humor koji nikoga ne vrijeđa, već podiže raspoloženje.

Cilj, problemi i hipoteze istraživanja

Osnovni cilj ovoga istraživanja bio je ispitati smisao za humor odgajatelja i njihove stavove o humoru u radu s djecom predškolske dobi. Temeljem navedenoga cilja, definirani su sljedeći istraživački problemi:

- 1) Ispitati smisao za humor kod odgajatelja djece predškolske dobi i njegove pojedine dimenzije (uživanje u humoru, smijeh, verbalni humor, humor u svakodnevnom životu, humor u odnosu na samoga sebe, humor u stresu)
- 2) Ispitati stavove odgajatelja o humoru i njegovoj primjeni u radu s djecom predškolske dobi
- 3) Ispitati povezanost socio-demografskih varijabli (dob, radni staž te vrstu rada) sa smislom za humor (svakom dimenzijom) i stavovima o važnosti humora u radu.

Polazeći od prethodno prikazanih teorijskih modela, pretpostavljeno je sljedeće:

H1: S obzirom na evidentan nedostatak ovakvih i sličnih istraživanja, kojih u našoj zemlji uopće nema, a u svijetu vrlo malo, očekuju se rezultati umjerene razine smisla za humor i njegovih pojedinih dimenzija.

H2: Očekuje se da odgajatelji imaju pozitivne stavove o humoru i njegovoj primjeni u radu s djecom predškolske dobi.

H3: Očekuje se da ne postoji povezanost između socio-demografskih varijabli (dob, radni staž, vrsta rada) sa smislom za humor (svakom dimenzijom) i stavovima o važnosti humora u radu.

Metoda

Ispitanici

U istraživanju je sudjelovao prigodni uzorak od 202 odgajatelja ($M = 2$) iz 13 dječjih vrtića Primorsko-goranske županije u rasponu od 22 do 63 godine, od kojih njih 42 radi u jaslicama, 124 u mješovitim skupinama, a 28 odgajatelja u homogenim skupinama. Njihova prosječna dob je $M = 37,97$ ($SD = 10,48$) u rasponu od 22 do 62 godine, a prosječan radni staž $M = 13,87$ ($SD = 10,98$) u rasponu od 0 do 40 godina radnoga staža. Rezultati Kolmogorov-Smirnovljeva testa pokazali su da se distribucije dobi i radnoga staža značajno razlikuju od normalne distribucije (za dob $p=0,05$, a za radni staž $p=,001$). Nakon dobivanja informiranoga pristanka ravnatelja dječjih vrtića i odgajatelja, pristupilo se provedbi istraživanja.

Instrumenti i postupak

U svrhu realizacije postavljenih istraživačkih problema, primijenjena su dva mjerna instrumenta. Primijenjena je *Skala smisla za humor* (eng. *Sense of Humor Pre-Test*, McGhee, 2012) koja mjeri šest dimenzija smisla za humor (uživanje u humoru, smijeh, verbalni humor, humor u svakodnevnom životu, humor u odnosu na samoga sebe i humor u stresu) i *Skala stavova odgajatelja prema važnosti humora u radu* čije su čestice kreirane u već navedene istraživačke svrhe ovoga rada.

Skala smisla za humor ima ukupno 24 čestice (4 čestice po svakoj dimenziji) na koje se ispitanici procjenjuju na skali Likertova tipa od 7 stupnjeva (od 1 = *uopće se ne slažem* do 7 = *potpuno se slažem*). Nakon provjere o dostupnosti mjernoga instrumenta, pristupilo se dvjema prijevodima skale na hrvatski jezik nakon čega je jezični stručnjak odabrao adekvatnu formu. Primjeri čestica po dimenzijama su: Uživanje u humoru je: „Na TV-u najčešće gledam komedije i druge smiješne serije“; Smijeh je „Dobro se nasmijem mnogu puta dnevno“; Verbalni humor je „Često pričam viceve/šale“; Humor u svakodnevnom životu je „Često uočavam humor u stvarima koje se događaju na poslu“; Humor u odnosu na samoga sebe je „Nemam problema rugati se na račun vlastitih fizičkih mana“; Humor u stresu je „Moj smisao za humor ne napušta me čak i kada sam pod stresom“. S obzirom da je ova skala prvi put primijenjena na našem jezičnom području, provedena je konfirmatorna faktorska analiza s Oblimin rotacijom. Ova je analiza rezultirala pretpostavljenom 6-faktorskom strukturom koja objašnjava 73,293 % varijance smisla za humor. U utvrđenoj 6-faktorskoj strukturi, jedino su čestice 4 i 9 pokazale zasićenja na više faktora, no zbog toga što se razina pouzdanosti nije mijenjala zadržani su u daljnjim analizama u onim faktorima kojima teorijski pripadaju (označeno sivim u tablici 1). Dakle, kao što je vidljivo u tablici 1, utvrđene su zadovoljavajuće razine pouzdanosti tipa Cronbach alpha.

Skala stavova odgajatelja o važnosti humora u radu se sastoji od 33 tvrdnje na koje su ispitanici odgovarali svojim stupnjem slaganja na Likertovoj skali od 7 stupnjeva (od 1 = *uopće se ne slažem* do 7 = *potpuno se slažem*). Tvrdnje su prikazane u tablici 2. Skala je pokazala zadovoljavajuću razinu pouzdanosti tipa Cronbach alpha ($\alpha = ,825$). Aritmetička sredina svih stavova iznosi $M = 5,2$ ($SD = ,55$). Ova je skala također sadržavala i pitanje otvorenoga tipa: „Molim Vas, ako želite, upišite svoj dodatni komentar u vezi s primjenom humora u radu s djecom:...“. Vidljivo je u tablici 3 da su odgajatelji upisali 30 komentara vezanih uz primjenu humora u radu s djecom predškolske dobi.

Nakon pristanka na istraživanje, odgajatelji su dobili uputu o samoprocjenama na Skali smisla za humor i Skali stavova o važnosti humora u radu. Popunjavanje skala trajalo je 15 minuta. Anonimnost i povjerljivost podataka je zagarantirana i zbog toga podaci o nazivima vrtića ostaju anonimni. Za obradu rezultata korišten je statistički paket SPSS 21.

Tablica 1. Konačna faktorska matrica na glavne komponente: 1 = humor u svakodnevnom životu, 2 = humor u odnosu na samoga sebe, 3 = uživanje u humoru, 4 = verbalni humor, 5 = smijeh i 6 = humor u stresu, s Oblimin rotacijom, komunalitetima i deskriptivnom statistikom za svaku česticu

D	Skala smisla za humor - čestice	Kom	Glavne komponente						Deskriptivna		PCA
			1	2	3	4	5	6	M	SD	α
1	14.Često nalazim humor u stvarima koje se događaju kod kuće.	,898	,864						5,36	1,49	,860
	15.Često nalazim humor u različitim situacijama izvan posla i kuće.	,863	,823						5,40	1,43	
	13.Često uočavam humor u stvarima koje se događaju na poslu.	,875	,801						5,24	1,47	
	16.Često dijelim s drugima smiješne događaje koje sam vidio ili koji su mi se dogodili.	,694	,469	,387					6,08	1,12	
	4.Važno mi je da imam mnogo humora u svojem životu. (3)	,687	,449		,374				6,02	1,23	
2	20.Nije mi problem smijati se šali u kojoj sam ja potpuno izložen.	,780		,879					5,52	1,43	,918
	19.Često se s drugima smijem na račun vlastitih grešaka ili nezgoda.	,712		,870					5,31	1,70	
	18.Često nalazim humor u mojim vlastitim nezgodama ili osobnim greškama.	,781		,847					5,83	1,22	
	17.Nemam problema rugati se na račun vlastitih fizičkih mana.	,704		,839					5,50	1,60	
3	3.Kada idem u kino, najčešće biram komedije.	,675			,815				4,38	1,97	,645
	1.Na TV-u najčešće gledam komedije i druge smiješne serije.	,595			,761				5,34	1,58	
	2.Kada kupim neki časopis, najčešće prvo tražim karikature.	,668			,583	-,372			2,95	1,83	
4	11.Često izmišljam svoje vlastite spontane igre riječima.	,761				-,754			4,01	1,67	,860
	12.Često izmišljam različite dosjetke.	,791				-,748			3,91	1,74	
	10.Često pričam smiješne priče.	,700				-,438			4,47	1,62	
5	6.Imam vedriji i srdačniji osmijeh nego većina drugih ljudi.	,693					,776		4,72	1,56	,774
	7.Ugodno mi je smijati se, čak i kad drugima nije.	,670					,714		4,58	1,82	
	8. Jedan ili oba moja roditelja mnogo su se smijala dok sam odrastao.	,523					,547		4,84	1,69	
	5.Dobro se nasmijem mnogo puta dnevno.	,712	,402				,472		5,61	1,35	
	9.Često pričam viceve/šale. (4)	,678				-,418	,449		3,90	1,78	
6	22.Često koristim svoj smisao za humor kako bih smanjio utjecaj stresa na moje raspoloženje.	,870						,818	5,17	1,58	,902
	23.Često koristim humor na poslu kako bih smanjio stres i bio efikasniji.	,795						,716	5,28	1,42	
	21. Moj smisao za humor ne napušta me čak i kada sam pod stresom.	,737						,686	4,55	1,70	
	24.Moj smisao za humor je najefikasniji alat za suočavanje sa svakodnevnim stresovima u životu.	,727						,609	4,91	1,55	
Eigenvalues			10,171	2,071	1,668	1,423	1,218	1,039			
Postotak objašnjenje varijance			42,380 %	8,629%	6,951%	5,929%	5,075%	4,329%	73.293%		
M(SD)			5,51 (1,23)	5,53 (1,27)	4,67 (1,17)	4,09 (1,43)	4,95 (1,24)	4,98 (1,38)			

Legenda: D = Dimenzije smisla za humor; Kom = Komunaliteti; M = Aritmetička sredina; SD = Standardna devijacija; PCA = Pouzdanost Cronbach alpha

Rezultati i rasprava

Smisao za humor. Pored rezultata faktorske analize, tablica 1 prikazuje deskriptivne pokazatelje (aritmetičku sredinu i standardnu devijaciju) kako za sve čestice Skale smisla za humor, tako i za svaku dimenziju smisla za humor. S obzirom da više rezultata ukazuje na viši smisao za humor, vidljivo je da su se odgajatelji najviše procijenili na čestici: „Često dijelim s drugima smiješne događaje koje sam vidio ili koji su mi se dogodili“ ($M = 6,08$, $SD = 1,12$), a najniže na čestici: „Kada kupim neki časopis, najčešće prvo tražim karikature“ ($M = 2,95$, $SD = 1,83$). S obzirom na dimenzije, najviše procjene dali su dimenzijama humor u svakodnevnom životu ($M = 5,51$, $SD = 1,23$) i humor u odnosu na samoga sebe ($M = 5,53$, $SD = 1,27$), a najmanje na dimenziji verbalnoga humora ($M = 4,09$, $SD = 1,43$). Prema tome, moguće je utvrditi da su odgajatelji u ovome istraživanju procijenili da imaju umjeren do blago povišen smisao za humor.

Prema utvrđenim nalazima odgajateljskoga smisla za humor, vidljivo je da je i potvrđena prva istraživačka hipoteza. Prema rezultatima vidljivo je kako odgajatelji imaju prosječan humor te se rezultati podudaraju s istraživanjem Allpar (1961; prema Martin, 2007) koje je utvrdilo kako ljudi uglavnom svoj smisao za humor ocjenjuju prosječnim ili iznadprosječnim. Razlog tome je prvenstveno što svaka osoba smatra da ima smisla za humor i zbog toga što ljudi smisao za humor najčešće povezuju s poželjnim karakteristikama i osobinama, a manje s osobnim stvaranjem i uživanjem u humoru. No, stvaranje humora i uživanje u humoru povezano je s osobinama ličnosti što i potkrepljuju rezultati studije Cann i Calhoun (2001) koji navode da visoki smisao za humor predviđa prisutnost pozitivnih osobina pojedinca kao osobe, ali ne podrazumijeva poželjne karakteristike (osjetljiv, obziran, pristojan), također ukazuju kako će osoba s visokim smislom za humor biti maštovitija, zanimljivija, pametnija, ugodnija, društvenija od tipične osobe te kako se visoki smisao za humor pojavljuje kod osoba s pozitivnim osobinama. Što znači da ovisno o pozitivnim ili negativnim osobinama osoba uživa u osobnom humoru ili humoru druge osobe.

Premda Paul McGhee (2012) pruža smjernice za razvoj svake pojedine dimenzije smisla za humor, ovdje se ističu samo one koje su vezane uz najniže procijenjenu dimenziju smisla za humor, a to je verbalni humor. Kako bi odgajatelj mogao razvijati i poticati vlastiti verbalni humor potrebno je da prati smjernice programa „Četiri humoristične navike za konstruiranje verbalnog humora“ (McGhee, 2012) kojem je cilj kreiranje vlastitih šala, poticanje i usavršavanje spontanoga verbalnog humora usred razgovora. Kako bi se ostvario cilj programa, potrebno je da odgajatelj čita smiješne priče, viceve, stvara vlastite anegdote u odgojno-obrazovnom procesu i izvan odgojno-obrazovnoga procesa. Nakon što pročita vic, odgajatelj ga treba zapamtiti, ako mu je smiješan, zatim ga ponoviti poslije osobe koja ga je ispričala, da prvi put zapamti poantu i glavna obilježja vica, da se ne smije vlastitoj šali unaprijed, da ne najavljuje sposobnost pričanja viceva te da ne odugovlači u pričanju vica jer kratkoća vica predstavlja dušu duhovitosti. Nakon što je odgajatelj usavršio verbalni humor, u odgojno-obrazovnom radu s djecom, primjerice, može organizirati aktivnost „Šaljivo jutro“. Aktivnost „Šaljivo jutro“ može uključivati čitanje viceva prilagođenih djeci, poticanje djece na vlastito stvaranje viceva, priča i anegdota.

Stavovi o važnosti humoru u radu. Tablica 2 prikazuje deskriptivnu analizu svih tvrdnji koje su odgajatelji procjenjivali na Skali stavova o humoru u radu. Stavovi su vrlo slično procijenjeni kao smisao za humor, no jednoznačnost u interpretaciji ovih nalaza nije zahvalna. Zato što su odgajatelji prema nekim stavovima izrazili djelomično slaganje, a prema nekim drugim stavovima djelomično neslaganje. Slijedom toga, vidljivo je iz tablice 2, kako odgajatelji smatraju važnim i uglavnom se slažu s ovim česticama: „Dočekujem djecu sa smiješkom na licu“, „U odgojno-obrazovnoj skupini potrebno je da vlada vesela i ugodna atmosfera“, „Mislim da je za rad odgajatelja jako važno da ima smijeha u skupini“, „U onim skupinama gdje su odgajatelji vedriji, vedrije je i ozračje“, „Potrebno je prepoznati i podržati djetetov humor“,

„Odgajatelj bi trebao znati primjenjivati humor u radu s djecom“, „Djeca vole igre riječima te ova zabavna aktivnost je vrlo poučna“, „Odgajatelj bi trebao imati razvijen smisao za humor“, „U radu s predškolskom djecom potrebno je koristiti humor“, „Djeca vole odgajatelje koji više koriste humor u svojem radu“, „Dijete može naučiti kako da koristi svoj humor“... Iako prema rezultatima odgajatelji djelomično koriste humor u svome radu, no ipak smatraju da je humor poželjna i važna vještina u odgojno-obrazovnoj skupini kod odgajatelja i kod djeteta što se može očitati iz navedenih tvrdnji s kojima se odgajatelji slažu.

Tablica 2. Deskriptivni parametri za sve čestice na Skali stavova odgajatelja o važnosti humora u radu (M = aritmetička sredina, SD = standardna devijacija)

Stavovi odgajatelja	M	SD
Dočekujem djecu sa smiješkom na licu.	6,75	,668
U odgojno-obrazovnoj skupini potrebno je da vlada vesela i ugodna atmosfera.	6,74	,567
Humoru nije mjesto u radu s djecom predškolske dobi.	6,61	1,13
Mislim da je za rad odgajatelja jako važno da ima smijeha u skupini.	6,59	,866
U onim skupinama gdje su odgajatelji vedriji, vedrije je i ozračje.	6,58	,808
Odgajatelj koji koristi humor u radu je neozbiljan.	6,53	1,18
Potrebno je prepoznati i podržati djetetov humor.	6,47	,811
Odgajatelj bi trebao znati primjenjivati humor u radu s djecom.	6,43	,796
Djeca vole igre riječima te je ova zabavna aktivnost vrlo poučna.	6,41	,855
Odgajatelj bi trebao imati razvijen smisao za humor.	6,30	1,02
U radu s predškolskom djecom potrebno je koristiti humor.	6,27	1,01
Djeca vole odgajatelje koji više koriste humor u svojem radu.	5,91	1,34
Dijete može naučiti kako koristiti svoj humor.	5,59	1,24
Ako odgajatelj često primjenjuje humor u svojem radu, može izgubiti autoritet kod djece s kojom radi.	5,75	1,86
Da bi se izmislila i ispričala dosjetka, potrebna je kreativnosti.	5,48	1,46
Djeca očekuju od mene da im pričam smiješne priče.	5,37	1,45
Odgajatelj bi trebao imati razvijen smisao za humor jer ga jedino tako može poticati kod djece predškolske dobi.	5,20	1,45
Djeca povezuju šalu sa smijehom odrasle osobe.	4,99	1,36
Djeca na humorističan način oponašaju svoje roditelje, odrasle osobe.	4,89	1,39
Šalim se na svoj račun u odgojno-obrazovnoj skupini.	4,76	1,71
Odgajatelj za potrebe svojega rada može uvježbati biti humorističan.	4,72	1,59
Studijski programi trebali bi nuditi mogućnost stjecanja kompetencija primjene humora u radu s djecom.	4,70	1,63
U vrtiću se jednako dobro i kvalitetno može raditi bez upotrebe humora.	4,42	1,81
Smisao za humor adekvatan djeci predškolske dobi može se uvježbati.	4,37	1,60
Kada je dijete tužno, potrebno je koristiti šaljive izraze.	4,25	1,73
Kada dijete ne želi jesti, ispričat ću mu humorističnu priču vezanu uz hranu.	4,20	1,63
Kada dijete neće spavati, ispričat ću mu humorističnu priču vezanu uz spavanje.	4,07	1,71
Povratne informacije o djetetu roditeljima prezentiram na humorističan način.	4,01	1,59
Nije lako znati kakav humor djeca vole i što će im biti smiješno.	3,97	1,89
Kada dijete plače, potrebno je koristiti šaljive izraze.	3,70	1,64
Prilikom sukoba dvoje djece potrebno je koristiti šaljive izraze.	3,61	1,69
Šalim se na račun djece u odgojno-obrazovnoj skupini.	2,92	1,82
Nije dobro koristiti humor na račun fizičkih nedostataka, jer to djeci može poslužiti kao izgovor za međusobno ruganje.	2,38	2,25

Nadalje, sa sljedećim tvrdnjama odgajatelji se malo slažu: „Za izmisliti i ispričati dosjetku, treba kreativnosti“, „Djeca očekuju od mene da im pričam smiješne priče“, „Odgajatelj bi trebao imati razvijen smisao za humor jer ga jedino tako može poticati kod djece predškolske dobi“, Djeca povezuju šalu sa smijehom odrasle osobe“, Djeca na humorističan način oponašaju svoje roditelje, odrasle osobe“, „Šalim se na svoj račun u odgojno-obrazovnoj skupini“ „Odgajatelj za potrebe svojeg rada može uvježbati biti humorističan“, „Studijski programi bi trebali nuditi mogućnost stjecanja kompetencija primjene humora u radu s djecom“. Moguće objašnjenje ovih samoprocjena jest činjenica da odgajatelji nisu dovoljno educirani o humoru kod djece. Prema Smidl (2014) svakodnevne situacije vezane uz djetetov smijeh ovise o odrasloj osobi, tj. njegovoj ili njezinoj reakciji. Ako odgajatelj ili roditelj ne doživljava smiješnu situaciju kao takvom, s vremenom će se ista reakcija javiti i kod djeteta. Djeca se smiju kada je roditeljima nešto smiješno, šalu povezuju sa smijehom odrasle osobe i čine određene smiješne stvari više puta na dan kako bi se roditelj smijao. Lyon (2006) navodi kako je humor urođeni društveni fenomen koji se može poticati, razvijati i naučiti u poticajnoj okolini. Stoga je humor značajno determiniran kulturnim kontekstom.

Istovremeno slaganje i neslaganje odgajatelji su pokazali prema ovim tvrdnjama: „Smisao za humor adekvatan djeci predškolske dobi može se uvježbati“, „Kada je dijete tužno potrebno je koristiti šaljive izraze“, „Kada dijete ne želi jesti, ispričat ću mu humorističnu priču vezanu uz hranu“, „Kada dijete neće spavati ispričat ću mu humorističnu priču vezanu uz spavanje“, „Povratne informacije od djetetu roditeljima prezentiram na humorističan način“, „Kada dijete plače potrebno je koristiti šaljive izraze“, „Prilikom sukoba dvoje djece potrebno je koristiti šaljive izraze“, „Šalim se na račun djece u odgojno-obrazovnoj skupini“. Lyon (2006). navodi kako je potrebno u određenim situacijama kada je dijete tužno ili se boji, koristiti humoristične priče koje su namijenjene samome djetetu ili situaciji koja kod djeteta uzrokuje tugu, strah, sukob. Kada se dijete boji ili je tužno, potrebno je konstruiranje šaljivih izraza ili viceva te se mogu koristiti šaljivi izrazi o životinjama budući da je ta tema djeci vrlo bliska. Također, Smidl (2014) navodi kako djeca pronalaze humor na svojem tijelu budući da im djetinjstvo omogućuje istraživanje o fizičkom tijelu, tijelu koje pripada njima, tijelu koje proizvodi neobične i čudne zvukove. Tako bi i svaki čovjek trebao pronalaziti humor na svome tijelu, u svom životu, a da nema neke određene komplekse zbog svojih nedostataka.

Većina odgajatelja izražava veliko neslaganje prema ovim tvrdnjama: „Humoru nije mjesto u radu s djecom predškolske dobi“, „Odgajatelj koji koristi humor u radu je neozbiljan“, „Ukoliko odgajatelj često primjenjuje humor u svojem radu može izgubiti autoritet kod djece s kojom radi“, „U vrtiću se jednako dobro i kvalitetno može raditi bez upotrebe humora“, „Nije lako znati kakav humor djeca vole i što će im biti smiješno“, „Nije dobro koristiti humor na račun fizičkih nedostataka, jer to djeci može poslužiti kao izgovor za međusobno rугanje“. Iz navedenih rezultata vidljivo je kako odgajatelji imaju pozitivan stav o humoru u radu s predškolskom djecom.

S nekim od navedenih čestica odgajatelji se malo slažu, niti se slažu niti se ne slažu budući da nisu dovoljno educirani za navedenu tematiku što se može očitati iz njihovih komentara na kraju ankete (tablica 3), a koji glase: „Trebalo bi više radionica, seminara, edukacija odgajatelja vezanih za primjenu humora u radu s djecom“, „Ovo mi je prva anketa vezana za humor u vrtiću, stoga sve pohvala za odabir teme“, „Vrlo dobra tema, naročito za "namrgođene" odgajatelje i odlična za djecu, to nam jako treba“, „Imamo li u knjižnicama dovoljno literature na tu temu?“

McGhee (2012) navodi kako je smisao za humor oblik mentalne igre, igre s idejama. Svaki odgajatelj ima određene opće predispozicije za mentalnu igru, no poslovni i privatni stres, užurbani tempo života, moguće je da inhibira rast i razvoj smisla za humor. Prirodni smisao za humor odgajatelja počne se razvijati kada se nađe u razigranom životnom segmentu, a to može biti kada se spusti na djetetovu razinu jer veliki dio djetetove igre pokazuje mentalnu

komponentu, igru s idejama. Odgajatelji svakodnevno provode vrijeme s djecom i kako bi pobudili svoju razigranost potrebno je da otvore svoje srce i um za dječju razigranost. Pored toga, studijski programi ranoga i predškolskog odgoja i obrazovanja ne nude izborne sadržaje koji bi razvijali tzv. kognitivnu udešenost adekvatnu za razvoj smisla za humor. Naposljetku, kao što će biti vidljivo u nastavku, najveći broj istraživanja do sada je bio posvećen istraživanju humora u nastavi, i to ponajviše u visokoškolskoj nastavi, što je također jedan od mogućih razloga zašto su utvrđene procjene umjerene.

Tablica 3. *Komentari odgajatelja vezani uz primjenu humora u radu s djecom predškolske dobi*
"Spustiti" se na njihovu razinu, igre djece sa scenskom lutkom (humor zagarantiran).

Smatram da je humor nužan za rad u odgojno-obrazovnom radu, no ne u svim situacijama, treba znati kada i u kojoj mjeri ga koristiti.
Humor je svakako potreban i poželjan, samo treba znati kada, kako i u kolikoj mjeri ga upotrebljavati.
Zdravi humor ovisi o situaciji i o tome što tko smatra humorom.
Nije dovoljno, jasno i razumljivo.
Smatram da je humor vrlo zdravi poticaj u odgojno-obrazovnom radu, ako je doziran i primijenjen u situacijama kada utječe pozitivno na cjeloviti rast i razvoj djeteta.
Mnogo više bi se trebali smijati u životu.
U svojoj praksi vidjela sam kako djeca vrlo dobro reagiraju na humor, pogotovo kad su tužna.
Uz veselu, nasmiješenu i šaljivu odgajateljicu, djeca se lakše i brže prilagođavaju novoj sredini i prihvaćaju novine.
Djetinjstvo treba biti veselo.
Odgajatelj mora biti sposoban prepoznati trenutak kad se može nasmijati i šaliti bez da povrijedi djecu, treba moći prepoznati mjeru i zaustaviti se kada procijeni da je to potrebno.
Smijeh je lijek
Humor je usko povezan s inteligencijom i iako je savršen alat za dobru atmosferu i umanjivanje stresa naravno da ima svoju mjeru. Afektivno, sve dok ne vrijeđa ili šteti smeta druge.
Humor se može koristiti u mnogim situacijama, nikad na račun fizičkih karakteristika.
Ovo mi je prva anketa vezana za humor u vrtiću, stoga sve pohvala za odabir teme.
Smijeh, humor, veselje produžuje život i smanjuje stres pogotovo u današnjoj svakodnevici.
Doza humora ovisi o situaciji i djetetu u skupini.
Moje mišljenje je da djeca "vole" odgajatelje sa smislom za humor te je tada atmosfera u skupini bolja i svime je ugodno u tom ozračju.
Vrlo dobra tema, naročito za "namrgođene" odgajatelje i odlična za djecu, to nam jako treba.
Odgajatelj sa smislom za smiješno unosi u skupinu opuštenost i veselu atmosferu.

Humor pomaže izdržati dugogodišnji staž.
Trebalo bi više radionica, seminara, edukacija odgajatelja vezanih za primjenu humora u radu s djecom.
Primjećujem da u radu s jaslčkom djecom, djeca vole humoristične kretnje tijela kod odgajatelja te izraze lica. Isto tako vole recitacije, rečenice i riječi koje se rimeju.
Imamo li u knjižnicama dovoljno literature na tu temu?
Humoristični komentar jedne šestogodišnjakinje odgajatelju: "Joj moram te gledati još dvije godine"
U korištenju humora treba biti umjeren i procijeniti u kojim situacijama ga koristiti.
Humor u skupini ne smije biti pretjeran i ovisi o raspoloženju djece u skupini.
Ponekad treba biti fleksibilan u vezi humora, ali optimizam smatram neophodno važnim.
Djeca vole kada uvodimo humor u svakodnevne aktivnosti, tada su opuštenija i lakše se uključuju u aktivnosti. Međutim, treba znati granice "lijepog ponašanja", a ne da se djeca međusobno ismijavaju (pojedince).
😊

Efekti primjene humora u odgojno-obrazovnom radu replicirani su u velikom broju istraživanja (Ziv, 1988; Martin, 2007). Ziv (1988) je u dva eksperimenta (prvi sa 161 studentom na kolegiju Statistike, a drugi sa 132 studenta na kolegiju Uvoda u psihologiju) utvrdio označajan efekt humora u nastavi gdje su studenti koje je poučavao primijenjujući humor u nastavi imali značajno bolje rezultate na testovima iz tih kolegija. Lazzarich (2013) proveo je istraživanje o ulozi humora i stripa u nastavnom procesu na uzorku od 354 ispitanika srednje i osnovne škole te 20 nastavnika anketara. Rezultati istraživanja utvrdili su da su nastavnici koji se smiju, koji koriste humor u odgojno-obrazovnom procesu učinkovitiji prilikom prijenosa nastavnoga gradiva, da humor predstavlja motivirajući faktor te da je važan za zasnivanje pozitivne komunikacije i povjerenja između učenika i nastavnika. Torok i suradnici (2004, p. 14) ističu da ako je humor prikladno primijenjen u odgojno-obrazovnoj skupini, ima visok potencijal da „humanize, illustrate, defuse, encourage, reduce anxiety, and keep people thinking“. Prikladnost primjene humora ističu Bekelja Wanzer i suradnici (2006), a Garner (2006) navodi da benefit humora za studente i ishode učenja postoji jedino ako nije tendenciozan. „When properly used, humor can be an effective tool to make a class more enjoyable, reduce anxiety, and improve the learning setting. The "ha-ha" of humor in the classroom may indeed contribute to the "aha!" of learning from the student.“ (Garner, 2006, p. 180). U svojem pregledanom radu o 40 godina istraživanja humora u obrazovanju, Banas i suradnici (2011) također ističu pitanje prikladnosti, te daju jasne smjernice onih vrsta humora u odgojno-obrazovnom radu koje su prikladne i koje nisu. Razlozi prikaza navedenih istraživanja idu u prilog utvrđenim rezultatima u ovome radu, predma nisu, kao što je već prije istaknuto, najadekvatniji s obzirom da se odnose na druge odgojno-obrazovne kontekste. Stoga doprinos ovoga rada leži upravo u činjenici da postoji manjak istraživanja o humoru u kontekstu ranoga i predškolskog odgoja i obrazovanja, da postoji potreba za takvim istraživanjima, kao i za promjenama u okviru programa stručnoga usavršavanja i studijskih programa budućih odgajatelja.

Korelacijske analize smisla za humor i stavovi o važnosti humora u radu. Tablica 4 prikazuje Spearmanove koeficijente korelacije s označenim statističkim značajnostima. Pored korelacijske analize između 6 dimenzija smisla za humor i stavova o primjeni humora u radu s djecom predškolske dobi, poručavane su i korelacije s dobi i radnim stažom. S obzirom na ove

dvije demografske varijable, nisu utvrđene značajne korelacije ni s jednom dimenzijom smisla za humor i stavovima. Kao što je i pretpostavljeno, s obzirom na višedimenzionalni model McGhee (2010), utvrđene su visoke, značajne i pozitivne interkorelacije između svih 6 dimenzija smisla za humor. Drugim riječima, navedene procjene ukazuju kako odgajatelji koji više uživaju u humoru više se smiju, više koriste verbalni, svakodnevni humor, humor u odnosu na sebe i humor u stresu.

Što se tiče odnosa procijenjenih stavova o primjeni humora u radu s djecom predškolske dobi i 6 dimenzija smisla za humor, sve su utvrđene korelacije značajno pozitivne. Dakle, odgajatelji koji imaju visoko izražene, jednu, pojedine ili sve dimenzije smisla za humor izražene ujedno ima i pozitivne stavove o primjeni humora u radu s djecom predškolske dobi. Navedeni rezultati pokazuju kako odgajatelji koji imaju izraženu jednu dimenziju smisla za humor, imaju izražene i druge dimenzije što se može potkrijepiti teorijom i programom sedam humorističnih navika svladavanja stresa (McGhee, 2013). U program se ističe da odgajatelj koji može koristiti humor u stresu je onaj odgajatelj kojemu je humor dio njegove svakodnevnice i pronalazi humor u svakodnevnom životu (svakodnevni humor), koji se smije od srca (smijeh), koji se smije samome sebi (humor u odnosu na samoga sebe), koji njeguje razigrani stav (uživanje u humoru), koji koristi igre riječima (verbalni humor) i koji pronalazi humor u trenutačnim stresnim situacijama (humor u stresu). Navedena teorija uključuje šest dimenzija smisla za humor (uživanje u humoru, smijeh, verbalni humor, svakodnevni humor, humor u odnosu na samoga sebe, humor u stresu) koje trebaju biti zadovoljene kako bi osoba mogla upravljati, razvijati i koristiti vlastiti smisao za humor.

Tablica 4. Korelacijska matrica 6 dimenzija smisla za humor, stavova odgajatelja o važnosti humora u radu (Stavovi), dobi i radnim stažom

	Radni staž	Smisao za humor						Stavovi
		Uživanje u humoru	Smijeh	Verbalni humor	Humor u svakodnevnom životu	Humor u odnosu na samoga sebe	Humor u stresu	
Dob	,939**	.027	-,103	,034	-,148	-,062	-,053	,037
Radni staž	1	,123	-,040	,106	-,055	,002	,035	,142
Uživanje u humoru		1	,362**	,442**	,304**	,248**	,317**	,331**
Smijeh			1	,620**	,567**	,364**	,616**	,333**
Verbalni humor				1	,594**	,416**	,638**	,400**
Humor u svakodnevnom životu					1	,483**	,664**	,365**
Humor u odnosu na samoga sebe						1	,547**	,389**
Humor u stresu							1	,444**

* $p < 0,05$; ** $p < 0,01$

Zaključak

Cilj ovoga istraživanja bio je ispitati smisao za humor odgajatelja i njihove stavove o primjeni humora u radu s djecom predškolske dobi. Utvrđeno je da odgajatelji imaju umjerenu razinu smisla za humor te djelomično pozitivne stavove o humoru i njegovoj primjeni u radu s djecom predškolske dobi. Korelacijske su analize pokazale da postoji značajna pozitivna povezanost između svih šest dimenzija smisla za humor međusobno te s pozitivnim stavovima o važnosti humora u radu s djecom predškolske dobi.

Premda zaključci ovoga istraživanja mogu biti samo relativni s obzirom na pojedine nedostatke istraživanja (prigodni uzorak, relativno mali uzorak te niža razina pouzdanosti subskale Uživanje u humoru), doprinos ovoga istraživanja nikako nije zanemariv. Postoji nekoliko argumenata za to. Prvo, od cjelokupne obrazovne vertikale, jedino rad u ranom i predškolskom odgoju i obrazovanju nije pokriven kada je riječ o proučavanju humora. Dalje, postojeći teorijski modeli također su zanemarili ovaj odgojno-obrazovni segment, s obzirom da se kako temelje tako i validiraju u kontekstu nastave (od osnovnoškolske do visokoškolske). Treće, praktične implikacije ovoga istraživanja više su nego vrijedne za kreiranje smjernica za unapređenje rada odgajatelja i razvoja humora kod djece predškolske dobi. Četvrto, kritičkim propitivanjem potreba dječjeg razvoja, suvremenih metoda rada i unapređenja kompetencija odgajatelja, rezultati ovoga istraživanja korisni su i za kontinuirani diskurs na području unapređenja studijskih programa, u ovom slučaju onog relevantnog za edukaciju budućih odgajatelja. U tom smislu, ključni su i za razvoj programa cjeloživotnoga učenja odgajatelja. Dakle, evidentno je da se radi o vrsti istraživanja koje je potrebno u kontekstu ranoga i predškolskog odgoja i obrazovanja, kako znanstvene, tako i stručne perspektive. Stoga, s obzirom da se radi o prvom i jedinom istraživanju ove vrste u našoj zemlji, važno je nastaviti proučavati ulogu humora u radu odgajatelja, načine razvijanja tzv. humorističnoga stila odgajatelja uz oprez od tendencioznosti, mogućnosti promjene studijskih programa i razvoj programa cjeloživotnog učenja, odnos primjene humora sa stresom odgajatelja na radu te kreiranja metoda rada s djecom koje unapređuju razvoj humora kod djece predškolske dobi.

Humor je poželjna tematika, pogotovo u odgojno-obrazovnim ustanovama jer odzvanjaju djetetovim smijehom te bi bilo korisno da odgajatelji imaju mogućnost educiranja o svojem humoru, kako ga razvijati i trenirati. Na odgajatelju je hoće li djetetov humor uočiti i poticati. Poticanje djetetova humora i humora odgajatelja uvelike pomaže u svakidašnjem životu. Dobro razvijen smisao za humor omogućuje djetetu sretnije djetinjstvo, djetinjstvo koje će biti prožeto smijehom i veseljem, lijepo razdoblje u kojem će stvoriti optimističnu sliku o sebi i o svijetu u kojem živi, a razvijen smisao za humor kod odgajatelja omogućuje mu da se nosi sa svakidašnjim problemima, sa stresnim situacijama, da konstruira veselu i vedru sliku budućnosti.

„Što znači živjeti sretno, živjeti uz smijeh, koristeći svoj smisao za humor?“ To znači da živimo poput djece, opušteno i zaigrano hodajući kroz svijet, koristeći svoj smisao za humor u situacijama koje nas brinu. „Humor's place in teaching is a high place because it helps us with meanings. Humor's place in teaching is a high place because it is always on the side of civilization against darkness, on the side of life against death. It not only brightens, it cleanses the common life. It not only helps the oppressed, it shames the oppressor. However mordant it may be, however it may sometimes prick our conscience or disturb us in our ease, it is always on the side of hope, high hope. It is always on the side of promise. It asserts that the sun still shines, however dismal the weather of the moment, that the morning stars still sing, and that, what is more, there is something to sing about.“ (Bradford, 1964, p. 70).

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Humor in the Work of Kindergarten Teachers: Analysis of the Self-reported Sense of Humor and Attitudes Toward the Importance of Humor in Working with Kindergarten children

Abstract

Given the importance and role of humor in educational work with children, and the extremely small amount of research that exists in this area, the main aim of the paper was to examine the sense of humor and attitudes towards the importance of humor in the work of kindergarten teachers. The study involved 202 kindergarten teachers (199 women) from 13 kindergartens in the Primorje-Gorski Kotar county.

A self-assessment scale called the Sense of Humor Scale and a survey of attitudes toward the importance of humor in working with children were applied. Factor analysis with oblimin rotation of the Sense of Humor Scale was done and the analysis confirmed the assumed 6-factor structure and explained 73,3% of variance.

In general, kindergarten teachers were found to have an average sense of humor. Also, a survey of attitudes about the importance of humor in working with children showed that kindergarten teachers have both positive and negative attitudes.

Correlation analyzes indicated that increase in sense of humor is associated with increase in positive attitudes about the importance of humor in work, while there were no significant correlations with socio-demographic variables. Based on the research, it is possible to conclude that kindergarten teachers have an average sense of humor and do not have an unambiguously defined attitude towards the importance of humor in working with children, which has significant implications for their professional development.

Keywords: *kindergarten teacher, sense of humor, importance of humor in work with children, kindergarten*

Zašto sam dobio lošu ocjenu? Razlika u pripisivanju uzroka uspjeha i neuspjeha s obzirom na spol i dob te optimizam kod učenika osnovne škole

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Sažetak

Učeničke percepcije uzroka uspjeha ili neuspjeha imaju bitne implikacije za njihove emocionalne reakcije, očekivanja budućega uspjeha, samopouzdanje te njihovo buduće ponašanje (Graham, 1991; Wiener, 1986; 1992). Pokazalo se da je optimistični atribucijski stil nasuprot pesimističnom atribucijskom stilu, povezan s nizom pokazatelja psihičkoga i fizičkoga zdravlja, te između ostalog, većim akademskim uspjehom (Mijočević i Rijavec, 2006; Yates, 2000).

U ovom istraživanju cilj je bio ispitati hoće li optimističniji atribucijski stil biti povezan s dispozicijskim optimizmom te postoji li razlika u atribucijskom stilu akademskoga uspjeha i neuspjeha po spolu i dobi. Ispitano je 122 učenika, od čega je 44 % dječaka i 56 % djevojčica. 52 % uzorka činili učenici su četvrtog, a 48 % učenici osmog razreda osnovne škole.

Rezultati ovoga istraživanja pokazali su da, iako optimistični atribucijski stil značajno korelira s dispozicijskim optimizmom, oni nisu istoznačni pojmovi te ih kao takve treba razlikovati. To je i bilo očekivano s obzirom da se atribucijski stil odnosi na objašnjavanje prošlih događaja, dok se dispozicijski optimizam odnosi na očekivanje od budućnosti.

Također, pokazalo se da nema spolnih razlika u atribucijskom stilu učenika i učenica, tj. da su djevojčice i dječaci jednako optimistični. No kada se promatraju razlike u dobi, učenici četvrtih razreda imaju optimističniji atribucijski stil od učenika osmih razreda. Takvi su rezultati u skladu s očekivanjima da optimizam opada u adolescenciji.

Ključne riječi: *optimistični atribucijski stil, dispozicijski optimizam, učenici četvrtoga i osmog razreda*

Uvod

Istraživanja motivacije za postignućem pokazala su da na motivaciju, emocije i ponašanje učenika bitno utječe kako učenici percipiraju uzroke svojega uspjeha i neuspjeha u prošlosti (Diener i Dweck, 1980; Weiner, 1992). Prema atribucijskoj teoriji postignuća (Weiner, 1986; 1992) atribucije, odnosno percipirani uzroci uspjeha ili neuspjeha u nekoj aktivnosti, mogu se promatrati unutar tri dimenzije. Prema prvoj dimenziji, mjestu uzročnosti, uzrok može biti unutar osobe ili izvan nje. Najčešći primjeri za unutrašnje mjesto uzročnosti su trud i sposobnosti, dok su za vanjsko mjesto uzročnosti primjeri sreća i težina zadatka. Sljedeća dimenzija je stabilnost uzroka prema kojoj uzroci mogu biti promjenjivi (npr. trud i sreća) ili relativno nepromjenjivi (npr. sposobnosti i težina zadatka). Treća dimenzija je mogućnost kontrole prema kojoj uzroci mogu biti pod našom kontrolom (npr. trud) ili izvan naše kontrole (npr. sreća, bolest). Abramson, Seligman i Teasdale (1978) su predložili i četvrtu dimenziju, globalnost. Prema njoj uzroci uspjeha ili neuspjeha u nekoj aktivnosti mogu biti globalni (npr. opća inteligencija) ili specifični (npr. određena vještina).

Na proces atribuiranja utječe cijeli spektar elemenata, neki od njih su: prošlo iskustvo, vrijeme utrošeno za zadatak, socijalne norme i slično. Primjerice u školi, ako se uspjeh postiže lako već u početku učenja i ponavlja, tada će učenici biti skloniji pripisivati ga sposobnostima, dok će ga pripisivati trudu ako se postiže nakon napornoga rada. Težina zadatka procjenjuje se obično ovisno o njegovoj opsežnosti ili uspjehu drugih vršnjaka. Ako uspjeh u zadatku nije dosljedno povezan s trudom, uspjeh će se pripisivati slučajnosti (Vizek Vidović, Rijavec, Vlahović Štetić i Miljković, 2014). Atribuiranje se kod ljudi spontano javlja (Wiener, 1986; 1992), pretpostavlja se zbog toga što ljudi žele što efikasnije upravljati sobom i svojom okolinom (Möller i Köller, 2000). No, češće će se javljati prilikom prvog susreta s nekom aktivnošću, nakon doživljenoga neuspjeha, neočekivanoga ishoda ili kada je aktivnost od velike subjektivne važnosti.

Istraživanja su pokazala da atribuiranje uspjeha i neuspjeha ima velik utjecaj na emocionalne reakcije, ponašanje te na očekivanje buduće uspješnosti (Wiener, 1982; 1986; 1992). Prema Wieneru (1982; 1986; 1992) percipirana stabilnost uzroka ishoda utječe na naše očekivanje budućega uspjeha, odnosno neuspjeha. Učenici koji uspjeh atribuiraju stabilnim uzrocima, u budućnosti će ponovno očekivati uspjeh dok učenici koji uspjeh pripisuju nestabilnim uzrocima, smatraju da se uspjeh može i ne mora ponoviti. Percipirano mjesto uzroka (unutrašnje ili vanjsko) utječe na emocionalne reakcije koje prate uspjeh ili neuspjeh. Drugim riječima, pripisivanje uspjeha unutrašnjim uzrocima (sposobnosti i trudu) rezultira osjećajem ponosa, dok pripisivanje neuspjeha unutrašnjim uzrocima rezultira osjećajem stida. Percepcija mogućnosti kontrole nad situacijom utječe na ponašanje usmjereno postignuću. Ako učenici vjeruju da imaju kontrolu, birat će teže zadatke i dulje će ustrajati u njima, ako pak misle da je situacija izvan njihove kontrole, lako će odustajati i neće se osobito truditi. Više istraživanja Wienera i drugih istraživača potvrdila su različite aspekte očekivane povezanosti između atribucija, emocija, očekivanja i ponašanja (npr. Brown i Weiner, 1984; Campbell i Martinko, 1998; Stephanou, 2012; za pregled više istraživanja vidi u Wiener, 1982; 1986).

Optimistični i pesimistični atribucijski stil

Iz navedenoga se može zaključiti da postoje adaptivniji atribucijski stilovi, to jest načini na koji obično objašnjavamo situacije, i manje adaptivni atribucijski stilovi. Istraživači su pronašli da je većina ljudi sklona vlastite uspjehe pripisivati unutrašnjim uzrocima, dok će vanjskim uzrocima pripisivati svoje neuspjehe (Mezulis, Abramson, Hyde i Hankin, 2004). Takav način objašnjavanja uzroka uspjeha i neuspjeha nekih prethodnih događaja naziva se atribucijama u vlastitu korist i služi nam da zaštitimo svoje samopoštovanje. Osim toga, pokazalo se da je određeni način atribuiranja više povezan s optimističnim načinom razmišljanja, dok je suprotan način atribuiranja karakterističan za depresivne pojedince.

Pojedinci s optimističnim stilom atribuiranja, koji se u literaturi još naziva optimistični eksplanatorni stil, kada su uspješni, atribuirat će to unutrašnjim, stabilnim i globalnim uzrocima, a kad im se dogodi neuspjeh atribuirat će to vanjskim, nestabilnim i specifičnim uzrocima (Abramson i sur., 1978; Gillham, Shatté, Reivich i Seligman, 2001). Tipičan primjer optimističnoga stila atribuiranja bi bilo pripisivanje uspjeha svojim sposobnostima, a neuspjeha sreći. Za pesimistični atribucijski ili eksplanatorni stil karakterističan je suprotan način atribuiranja.

Osim s trenutačnim ponašanjem i emocionalnim reakcijama, optimistični atribucijski stil pokazao se povezanim s nižom stopom depresivnih simptoma (Seligman i Nolen-Hoeksema, 1987; Sweeney, Anderson i Bailey, 1986), boljim zdravljem i duljim životom (Kamen i Seligman, 1987; Peterson, 2000), boljim profesionalnim (Seligman i Shulman, 1986), akademskim (Mijočević i Rijavec, 2006; Rowe i Lockhart, 2005; Yates, 2000) i sportskim uspjehom (Martin-Krumm, Sarrazin, Peterson i Famose, 2003; Seligman, Nolen-Hoeksema, Thornton i Thornton, 1990). S druge strane, pesimistični atribucijski stil pokazao se negativno povezanim s većinom navedenih varijabli.

Dispozicijski optimizam

Iako se određeni način objašnjavanja prošlih događaja u literaturi naziva optimističnim ili pesimističnim, on nije istoznačnica s optimizmom. Optimisti su ljudi koji očekuju da će im se u budućnosti događati dobre stvari, dok su pesimisti oni koji očekuju da će im se događati loše stvari (Carver i Scheier, 2001). Ovakvo generalizirano pozitivno uvjerenje o budućem razvoju događaja naziva se u literaturi dispozicijski optimizam. Dispozicijski optimizam, kao i optimističan atribucijski stil, povezan je s mnogim pokazateljima psihološkoga i fizičkoga zdravlja. Primjerice, istraživanja su pokazala da osobe koje pokazuju visoku razinu dispozicijskoga optimizma također imaju bolju psihološku prilagođenost (Blankstein, Flett i Koledin, 1991), bolje su raspoloženi (Segerstrom, Taylor, Kemeny, i Fahey, 1998), doživljavaju manje ljutnje i bolje se nose s njom (Ausbrooks, Thomas i Williams, 1995), imaju manju stopu depresije (Chang, 1998) i veće zadovoljstvo životom (Chang, 1998; Rijavec i Ivanković, 2017). Također, dispozicijski optimizam pokazao se povezan s boljim zdravljem (Scheier i Carver, 2001) i više ponašanja koja pozitivno utječu na zdravlje (Robbins, Spence i Clark, 1991; Steptoe i sur., 1994). Optimisti se pri problemima aktivnije suočavaju s njima (Scheier, Weintraub i Carver, 1986; Strutton i Lumpkin, 1992), a kada su suočeni s više konfliktnih ciljeva, bolje ih balansiraju (Segerstrom i Nes, 2006). Prepoznaju kada je situacija pozitivna te onda ulažu više truda, a ako je situacija bezizlazna, prije će odustati (Pavlova i Silbereisen, 2013). U školskom kontekstu, imaju veći akademski uspjeh (Rijavec i Ivanković, 2017; Singh i Jha, 2013), pokazuju veći interes za školu (Koizumi, 1995), veću usmjerenost na učenje (Rijavec i Ivanković, 2017) i bolju prilagodbu na školu (Boman i Yates, 2001).

Iako su termini optimistični atribucijski stil i dispozicijski optimizam slični i slično zvuče, to nisu jednoznačni termini i ne bi ih trebalo zamjenjivati. Dispozicijski optimizam je ono što laički shvaćamo pod pojmom optimizma i odnosi se na vjeru u bolju budućnost, dok se optimistični atribucijski stil odnosi na objašnjavanje događaja koji su se već dogodili u prošlosti. Naša objašnjenja zašto su se neki događaji tako odigrali u prošlosti i očekivanja od budućnosti ne moraju uvijek biti povezani. Štoviše, dosadašnja su istraživanja pokazala da optimistični atribucijski stil i dispozicijski optimizam koreliraju u rasponu od .20 do .77 (vidjeti Gillham i sur., 2001 za pregled istraživanja), no to su uglavnom istraživanja rađena na odraslim pojedincima. S obzirom na to da nedostaje istraživanja koja ispituju odnos dispozicijskoga optimizma i optimističnoga atribucijskog stila u dječjoj i mlađoj adolescentskoj dobi, ovim smo istraživanjem htjeli provjeriti odnos ta dva konstrukta u dječjoj i mlađoj adolescentskoj dobi.

Spolne i dobne razlike u atribucijskom stilu kod djece i mlađih adolescenata

Metaanaliza Mezulisa i suradnika (2004) pokazala je da djeca u dobi od 8 do 11 godina imaju najoptimističniji atribucijski stil s obzirom na cijeli životni tijek, s time da istraživanja o atribucijskom stilu djece mlađe od 8 godina baš i nema zbog ograničenja u provođenju istraživanja s tako malom djecom. U ranoj adolescenciji (12-14 godina) dolazi do naglog opadanja optimističkoga atribucijskog stila. Smatra se da je razlog opadanja optimizma to što djeca s kognitivnim razvojem počinju realnije promatrati svijet. U ranoj dobi još uvijek ne razlikuju točno želje od realnosti, no tijekom sazrijevanja poboljšava se njihova sposobnost procesiranja i integriranja informacija iz realnosti (Klaczynski i Fauth, 1997; Schuster, Ruble i Weinert, 1998). Nakon adolescencije ljudi polako postaju sve optimističniji da bi optimizam dostigao dječju razinu tek u zreloj dobi ili otprilike nakon 55 godine života.

Iako postoje neka istraživanja koja pokazuju da su djevojčice sklonije optimističnom stilu od dječaka (Mijočević i Rijavec, 2006; Nolen-Hoeksema, Girgus i Seligman, 1991) te neka koja pokazuju upravo suprotno (Diener i Dweck, 1978; Nicholls, 1975; Parsons, Meece, Adler i Kaczala, 1982), nekoliko provedenih metaanaliza (Frieze, Whitley, Hanusa i McHugh, 1982; Mezulis i sur., 2004; Sohn, 1982) nisu pronašle spolne razlike u optimističnom atribucijskom stilu kod dječaka i djevojčica u dobi od 8 do 14 godina. Stoga su naše hipoteze da neće biti razlike između djevojčica i dječaka u atribucijskom stilu, a da će učenici četvrtoga razreda imati optimističniji atribucijski stil od učenika osmoga razreda.

Cilj istraživanja

Cilj ovoga istraživanja bio je ispitati razlike u pripisivanju uzroka školskoga uspjeha i neuspjeha s obzirom na razlike u dispozicijskom optimizmu učenika te na spol i dob.

Atribucijski stil učenika ispitivan je u ovom istraživanju s četiri kategorije (trud, sreća, sposobnost i težina zadatka) jer su se te kategorije najčešće pojavljivale u prijašnjim istraživanjima.

Prvi problem bio je ispitati povezanost dispozicijskoga optimizma učenika s različitim atribucijama školskoga uspjeha i neuspjeha. Pretpostavljeno je da će optimističniji učenici uspjeh više atribuirati unutarnjim uzrocima (sposobnostima i trudu) te da će neuspjeh više atribuirati promjenjivim uzrocima (trudu i sreći).

Drugi problem bio je ispitati razliku u pripisivanju uzroka školskoga uspjeha i neuspjeha s obzirom na spol učenika. Pretpostavljeno je da neće biti spolnih razlika u atribuciji uspjeha i neuspjeha.

Treći problem bio je ispitati razlike u pripisivanju uzroka školskoga uspjeha i neuspjeha s obzirom na dob učenika te smo pretpostavili da će učenici četvrtih razreda više od učenika osmog razreda atribuirati uspjeh unutarnjim uzrocima (sposobnostima i trudu), a neuspjeh promjenjivim uzrocima (sreći i trudu).

Metoda

Sudionici

Ispitivanje je provedeno u jednoj osnovnoj školi u Zagrebu u razredima za vrijeme redovite nastave. Ispitana su tri četvrta i tri osma razreda. Ukupan broj učenika obuhvaćenih ispitivanjem je 122, od čega 63 (52 %) učenika četvrtih razreda i 59 (48 %) učenika osmih razreda. U uzorku je ukupno 52 (44 %) dječaka i 70 (56 %) djevojčica.

Od ukupno 63 učenika četvrtih razreda, 34 (54 %) je djevojčica i 29 (46 %) dječaka. Od ukupno 59 učenika osmih razreda, 36 (61 %) je djevojčica, a 23 (39 %) dječaka.

Najmlađi ispitanik uključen u ovo istraživanje imao je 9 godina, dok je najstariji ispitanik imao 14 godina. Učenici četvrtoga razreda u prosjeku su imali 9 godina i 11 mjeseci, a učenici osmoga 13 godina i 11 mjeseci.

Instrumenti

YLOT - The Youth Life Orientation Test (Ey i sur., 2005) - *Test za određivanje optimizma mladih*. Upitnik se sastoji od šest tvrdnji koje ispituju optimizam (npr. *Obično očekujem da ću imati dobar dan*) i šest koje ispituju pesimizam (npr. *Kada stvari idu dobro, ja očekujem da će nešto krenuti po zlu*). Učenik zaokružuje stupanj na Likertovoj skali od 1 (Uopće se ne slažem) do 5 (U potpunosti se slažem) ovisno o mjeri koliko se s navedenim tvrdnjama slaže. Upitnik je ranije preveden i validiran na hrvatskom uzorku te je pokazao zadovoljavajuće metrijske karakteristike (Rijavec i Ivanković, 2017).

Atribucije školskoga uspjeha i neuspjeha. Čestice za ispitivanje atribucija školskoga uspjeha i neuspjeha konstruirane su u svrhu provođenja ovoga istraživanja. Sastoje se od četiri pitanja koja ispituju atribucije neuspjeha i uspjeha iz matematike te neuspjeha i uspjeha iz hrvatskoga jezika. Učenici su upitani kada dobiju dobru ili lošu ocjenu iz Matematike ili Hrvatskoga jezika što smatraju da je uzrok tome (sreća, trud, sposobnosti ili težina predmeta).

Na kraju upitnika ispitani su demografski podatci o učeniku: spol, dob i razred.

Postupak

Ispitivanje je provedeno u učionicama jedne zagrebačke osnovne škole za vrijeme nastave, sa svakim razredom zasebno. Učenicima je objašnjena svrha istraživanja te su obaviješteni da u svakom trenutku mogu odustati od ispitivanja. Ispitivanje je bilo anonimno, a roditelji su ranije dostavili suglasnost za sudjelovanje djece u istraživanju.

Rezultati i rasprava

Deskriptivni podaci

Iz tablice 1 vidljivo je da većina učenika uspjeh na ispitu iz Matematike i Hrvatskoga jezika više pripisuje unutrašnjim uzrocima (trud i sposobnosti), dok neuspjeh više pripisuje promjenjivim uzrocima (trudu i sreći). Takvi rezultati sukladni su s prijašnjim istraživanjima koja pokazuju da kod većine populacije postoje atribucije u vlastitu korist (Anderson, Krull, i Weiner, 1996; Mezulis i sur., 2004). Prema provedenoj metaanalizi (Mezulis i sur., 2004) atribucije u vlastitu korist imaju jedan od najsnažnijih efekata u psihološkim istraživanjima kognicije te iako jakost efekta varira u podpopulacijama, on i dalje postoji. Smatra se da je razlog postojanja atribucija u vlastitu korist zaštita samopoštovanja te da je to evolucijska prilagodba koja pomaže da održimo vlastito mentalno zdravlje (Taylor i Brown, 1988; Tiger, 1979).

Tablica 1.

Učeničke atribucije za iskustvo uspjeha i iskustvo neuspjeha na ispitu iz Matematike te Hrvatskoga jezika

	Atribucije uspjeha			
	Matematika		Hrvatski j.	
	Unutrašnji	Vanjski	Unutrašnji	Vanjski
Frekvencija	85	37	84	38
Postotak	69.7	30.3	68.9	31.1

Atribucije neuspjeha				
	Matematika		Hrvatski j.	
	Promjenjiv	Nepromjenjiv	Promjenjiv	Nepromjenjiv
Frekvencija	95	27	104	18
Postotak	77.9	22.1	85.2	14.8

Tablica 2.

Prosječni rezultat na skali dispozicijskoga optimizma po skupinama

		N	Raspon	Minimum	Maksimum	Aritmetička sredina	Std. devijacija
Četvrti razred	Dječaci	29	(-4) - 4	-.86	4.00	1.66	1.06
	Djevojčice	34	(-4) - 4	-1.86	3.86	1.97	1.12
Osmi razred	Dječaci	23	(-4) - 4	-.14	3.29	1.70	1.03
	Djevojčice	36	(-4) - 4	-4.00	4.00	.79	1.63

Iz tablice 2 vidljivo je da većina učenika više sklona dispozicijskom optimizmu nego pesimizmu što je u skladu s literaturom (Gillham i sur., 2001). Nadalje, vidljivo je da kod dječaka nema promjena u optimizmu u razdoblju od četvrtoga do osmoga razreda, dok su djevojčice nešto malo optimističnije od dječaka u četvrtom razredu, da bi u osmom razredu postale pesimističnije od dječaka. Ovakvi rezultati u skladu su s ranijim istraživanjima. Primjerice, istraživanje Ey i suradnika (2005) na djeci od trećega do šestoga razreda pokazalo je da su dječaci u toj dobi nešto pesimističniji od djevojčica, dok je istraživanje Mavioğlu i suradnika (Mavioğlu, Boomsma i Bartels, 2015) pokazalo da su u dobi od 13 do 16 godina dječaci nešto optimističniji od djevojčica. Nadalje, istraživanje Rijavec i Ivanković (2017) pokazalo je da su mlađi učenici nešto optimističniji od starijih što je sukladno našim rezultatima.

Povezanost dispozicijskoga optimizma i atribucijskoga stila

Prva je hipoteza bila da će dispozicijski optimizam biti značajno povezan s optimističnim atribucijskim stilom. Iz tablice 3 može se vidjeti da se dispozicijski optimizam pokazao značajno pozitivno povezan s optimističnim atribucijskim stilom, odnosno pripisivanju uspjeha unutrašnjim uzrocima (trudu i sposobnostima) ($r_{\text{matematika}}=0.32$; $p=0.000$; $r_{\text{hrvatski}}=0.24$; $p=0.008$) te neuspjeha promjenjivim uzrocima (sreći i trudu) ($r_{\text{matematika}}=0.27$; $p=0.000$; $r_{\text{hrvatski}}=0.30$; $p=0.008$) što je u skladu s literaturom (Gillham i sur., 2001). No te su korelacije relativno niske te sukladno ranijim istraživanjima, dobiveni rezultati ukazuju da dispozicijski optimizam i optimistični atribucijski stil nisu jednaki konstrukti (Ey i sur., 2005; Gillham i sur., 2001). Naime, dispozicijski optimizam odnosi se na pozitivna očekivanja od budućnosti, dok se pozitivan atribucijski stil odnosi na pozitivno tumačenje događaja koji su se dogodili u prošlosti. Osoba može pozitivno tumačiti svoju prošlost, ali da ne bude previše optimistična oko budućnosti. Primjerice, učenik može misliti „Dobro sam riješio ispit jer sam mi to ide, ali mislim da će u budućnosti gradivo biti teže pa ga neću tako dobro riješiti“ ili obrnuto.

Tablica 3.

Povezanost dispozicijskoga optimizma s atribucijama iskustva uspjeha ili neuspjeha na ispitu iz Matematike i Hrvatskog jezika

	Atribucije uspjeha		Atribucije neuspjeha	
	Matematika	Hrvatski	Matematika	Hrvatski
Pearsonov koeficijent korelacije	.32	.24	.27	.30
Značajnost	.000	.008	.003	.001

Također, skala dispozicijskoga optimizma (YLOT; Ey i sur., 2005) ispituje optimizam općenito dok se atribucije odnose samo na školski kontekst. Moguće je da smo koristili kompozitne rezultate koji se sastoje od atribucija u više različitih konteksta da bi korelacije ipak bile nešto više.

Razlika u atribucijskom stilu s obzirom na spol učenika

Tablica 4.

Učeničke atribucije za iskustvo uspjeha i iskustvo neuspjeha na ispitu iz Matematike i Hrvatskog jezika s obzirom na spol učenika

		Atribucije uspjeha			
		Matematika		Hrvatski	
		Unutrašnji	Vanjski	Unutrašnji	Vanjski
ods	Dječak	35	17	36	16
	Djevojčica	50	20	48	22
Hi-kvadrat (df=1)		0.240		0.06	
Značajnost		0.624		0.938	

		Atribucije neuspjeha			
		Matematika		Hrvatski	
		Promjenjiv		Nepromjenjiv	
ods	Dječak	43	9	44	8
	Djevojčica	52	18	60	10
Hi-kvadrat (df=1)		1.224		0.029	
Značajnost		0.269		0.886	

Druga hipoteza bila je da neće biti spolnih razlika u atribucijskom stilu. Iz tablice broj 4 može se vidjeti da je ta hipoteza je potvrđena. Rezultati su u skladu s metaanalizama (Frieze i sur., 1982; Mezulis i sur., 2004; Sohn, 1982) da nema spolnih razlika u atribucijskom stilu u populaciji nego da su pronađene razlike samo rezultat fluktuacija u uzorcima. Drugim riječima, prema metaanalizi Mezulisa i suradnika (2004) ako neke spolne razlike u uzorcima i postoje, one nisu statistički značajne.

Razlika u atribucijskom stilu s obzirom na dob učenika

Treća hipoteza bila je da će mlađi učenici više pripisivati uspjeh unutrašnjim, a neuspjeh promjenjivim uzrocima od starijih učenika i ta je hipoteza djelomično potvrđena.

Rezultati prikazani u tablici 5 pokazuju da u pripisivanju uzroka uspjeha nema razlike po dobi, dok u atribucijama neuspjeha ima (matematika: $\chi^2=27.16$; $p=0.000$; hrvatski: $\chi^2=7.32$; $p=0.007$). Sukladno očekivanjima pokazalo se da su stariji učenici nešto skloniji pesimizmu od mlađih, no samo za atribucije neuspjeha, što nam govori da su atribucijski stil loših i dobrih događaja dva različita konstrukta. To je u skladu s literaturom koja je pokazala da je atribucijski stil loših događaja snažnije povezan s različitim varijablama od atribucijskoga stila pozitivnih događaja (Gillham i sur., 2001; Peterson, 1991; Peterson, Buchanan i Seligman, 1995). Jedno moguće objašnjenje je da se atribucijski stil pozitivnih događaja više odnosi na to koliko uživamo u svojim trijumfima (Wiener, 1986) i tako amortiziraju učinak negativnih događaja, dok atribucijski stil loših događaja neki istraživači smatraju rizikom za depresiju (Abramson i sur., 1998; Seligman i sur., 1984).

Tablica 5.

Učeničke atribucije za iskustvo uspjeha i iskustvo neuspjeha na ispitu iz Matematike i Hrvatskog jezika s obzirom na dob učenika

		Atribucije uspjeha			
		Matematika		Hrvatski	
		Unutrašnji	Vanjski	Unutrašnji	Vanjski
Razred	Četvrti	47	16	47	16
	Osmi	38	21	37	22
Hi-kvadrat (df=1)		1.50		2.01	
Značajnost		0.221		0.156	

		Atribucije neuspjeha			
		Matematika		Hrvatski	
		Promjenjiv		Nepromjenjiv	
Razred	Četvrti	61	2	59	4
	Osmi	34	25	45	14
Hi-kvadrat (df=1)		27.16		7.32	
Značajnost		0.000		0.007	

S obzirom da je u atribucijama neuspjeha postojala statistički značajna razlika po dobi, htjeli smo još provjeriti postoji li ta razlika i uzorku samo djevojčica i samo dječaka. Dodatnim analizama posebno za djevojčice, a posebno za dječake prikazanim u tablici 6 može se vidjeti da i dječaci i djevojčice imaju sličan obrazac promjene atribucijskoga stila s dobi prema pesimističnijem stilu.

Tablica 6.

Učeničke atribucije za iskustvo neuspjeha na ispitu iz Matematike i Hrvatskog jezika s obzirom na dob i spol učenika

		Atribucije neuspjeha iz Matematike			
		Dječaci		Djevojčice	
		Promjenjiv	Nepromjenjiv	Promjenjiv	Nepromjenjiv
Razred	Četvrti	28	1	33	1
	Osmi	15	8	19	17
P (Fisherov test*, df=1)		0.007		0.000	

		Atribucije neuspjeha iz Hrvatskog jezika			
		Dječaci		Djevojčice	
		Promjenjiv	Nepromjenjiv	Promjenjiv	Nepromjenjiv
Razred	Četvrti	27	2	32	2
	Osmi	17	6	28	8
P (Fisherov test*, df=1)		0.118		0.085	

*Napomena. Provodi se jer jedna ćelija ima manje od očekivanog minimuma.

Drugim riječima, učenici oba spola imaju u četvrtom razredu optimističniji atribucijski stil nego u osmom razredu. Neki autori (Klaczynski i Fauth, 1997; Schuster i sur., 1998) smatraju da djeca s kognitivnim razvojem počinju realnije promatrati svijet. Manja djeca još uvijek ne razlikuju točno želje od realnosti, no tijekom dobi poboljšava se njihova sposobnost procesiranja i integriranja informacija iz realnosti. Također, moguće je da su do adolescencije već doživjeli dosta različitih iskustava, pogotovo u školskom kontekstu, pa i to doprinosi pesimističnijoj procjeni svojih sposobnosti. Ranija su istraživanja pokazala da iako dječja kompetencija s dobi raste, oni svoje sposobnosti s rastom dobi procjenjuju kao lošije (Eccles, Wigfield, Harold i Blumenfeld, 1993; Shell, Colvin, i Bruning, 1995; Wigfield i sur., 1997). Smatra se da je to stoga jer sazrijevajući bolje razumiju povratne informacije koje dobivaju i uz to sve se više uspoređuju s vršnjacima. Osim toga, s porastom dobi okruženje postaje sve više takvo da se potiče kompeticija i usporedba među vršnjacima.

U ovoj dodatnoj analizi vidljivo je još da kada su napravljene posebno analize za djevojčice i posebno za dječake, da samo u atribucijama neuspjeha iz Matematike dolazi kod učenika oba spola do promjene u pesimističniji atribucijski stil. Naime, vjerojatno zbog premalog uzorka, kada se odvojeno gledaju djevojčice i dječaci, u atribucijama neuspjeha na ispitu iz hrvatskog jezika prestaje biti razlike po dobi. No, u atribucijama neuspjeha na ispitu iz Matematike i dalje je statistički značajna razlika između četvrtog i osmog razreda, što znači da je ta razlika robustnija. Iz toga možemo zaključiti da učenici osmoga razreda više atribuiraju svoj neuspjeh iz Matematike nepromjenjivim uzrocima (sposobnostima i težini zadatka) nego kada dožive neuspjeh iz Hrvatskog jezika. Takav rezultat vjerojatno odražava među učenicima uvriježeno mišljenje da su za matematiku važnije urođene sposobnosti, dok je za uspjeh u humanističkim predmetima bitniji trud što je u skladu s istraživanjem Eccles i suradnika (1993) da dječja i adolescentska očekivanja o vlastitim sposobnostima ovise o pojedinoj domeni, a nisu globalni. Također, istraživanje provedeno na hrvatskom uzorku (Pavlin-Bernardić, Vlahović-Štetić, Rovani i Arambašić, 2009) pokazalo je da s dobi raste uvjerenje da učenika o urođenosti matematičkih sposobnosti što je isto u skladu s dobivenim rezultatima. Takav način razmišljanja, koji se još u literaturi naziva i fiksnim načinom razmišljanja (nasuprot rastu

usmjerenom) (Dweck, 2006), može uslijed opetovanoga doživljavanja neuspjeha dovesti do naučene bespomoćnosti (Diener i Dweck, 1978) te je stoga vrlo nepovoljan za učenike.

Teorijske i praktične implikacije ovoga istraživanja

Rezultati ovoga istraživanja pokazuju da dispozicijski optimizam i optimistični atribucijski stil nisu u potpunosti preklapajući pojmovi pa bi, s obzirom da su oba konstrukta povezana s mnogim pokazateljima psihološkoga i fizičkoga zdravlja (Gillham i sur., 2001), učitelji kod učenika trebali istovremeno poticati optimistično objašnjavanje prošlih događaja te optimistična očekivanja od budućnosti. Isto je bitno i za istraživače jer se pod konstruktom optimizam može naići i na istraživanja očekivanja i atribucija, a često je teško razlikovati što je produkt kojeg teorijskog pristupa.

Poznato je da je adolescencija razdoblje povezano s depresivnošću i padom samopouzdanja (Hankin i sur., 1998) te je i u ovom istraživanju potvrđen porast pesimističnoga načina atribuiranja s ulaskom u adolescenciju. Učitelji bi toga trebali biti svjesni te pomoći učenicima u održavanju optimističnoga stila atribuiranja kako bi time održali motivaciju za učenje i podržali učeničko mentalno zdravlje. Učitelji, a očito učitelji prirodnih predmeta još više, trebaju biti svjesni da su oni svojim učenicima modeliraju i utječu na to kakav će učenici imati atribucijski stil (Dweck, 1999; Wiener, 1980) te da je učenički atribucijski stil povezan s njihovom motivacijom i budućim ponašanjem.

Zaključak

Rezultati ovoga istraživanja pokazali su da iako optimistični atribucijski stil značajno korelira s dispozicijskim optimizmom oni nisu jednoznačni pojmovi. To smo i očekivali s obzirom na to da se atribucijski stil odnosi na objašnjavanje prošlih događaja, dok se dispozicijski optimizam odnosi na očekivanja od budućnosti.

Također, pokazalo se da nema spolnih razlika u atribucijskom stilu učenika četvrtih i osmih razreda, odnosno da su djevojčice i dječaci jednako optimistični. No, kada se promatraju razlike u dobi, učenici četvrtih razreda imaju optimističniji atribucijski stil od učenika osmih razreda. Takvi rezultati su u skladu s očekivanjima i literaturom.

Ograničenja ovoga istraživanja odnose se na relativno malen broj ispitanika. U budućnosti bi bilo dobro provesti slično istraživanje na većem uzorku djece te za ispitivanje atribucijskoga stila koristiti kompozitnu skalu kako bi se povećala pouzdanost rezultata.

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Why did I get a bad grade? Difference in Attributing the Causes of Success and Failure with regard to Gender, Age, and Optimism for Primary School Students

Abstract

Student perceptions of the cause of success or failure have important implications for their emotional reactions, expectations of future success, self-confidence and their future behavior (Graham, 1991; Wiener, 1986; 1992). It has been shown that the optimistic attributional style, in contrast to the pessimistic attributional style, is associated with various indicators of psychological and physical health and, among other things, greater academic success (Mijočević & Rijavec; 2006; Yates, 2000).

The aim of this research was to examine whether a more optimistic attributional style will be associated with dispositional optimism and whether there is any difference in the attributing academic success and failure between genders, and between fourth and eighth grade students.

122 students participated in this research, 44% of which were boys and 56% girls. 52% of the sample consisted of fourth and 48% of eighth grade students.

In addition, it has been shown that although the optimistic attributional style correlates significantly with the dispositional optimism, they are not identical constructs and need to be

distinguished as such. This was expected as the attributional style refers to the explanation of past events, while dispositional optimism refers to the expectations about the future.

The results of this research have shown that there are no gender differences in the attributional style of female and male students, i.e., girls and boys are equally optimistic. When age differences are examined, fourth grade students have a more optimistic attributional style than eighth grade students. Such results are in line with expectations and literature.

Keywords: *optimistic attributional style, dispositional optimism, fourth and eighth grade students*

Intelligence, Self-Esteem and Physical Attractiveness in Students of Preschool and Primary Education

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Abstract

An empirical study examining relations among general intelligence, self-esteem, and perceived levels of both intelligence and physical attractiveness was conducted on a sample of Macedonian university students (203 in total). Data collection was carried out using three measurement tools: FRT (test of general intellectual ability), SEI, i.e. Coopersmith Self-Esteem Inventory, and (3) anonymous survey sheet, seeking an estimation of the level of both physical attractiveness and intelligence of colleagues, including oneself. Correlation-based data processing revealed the results that only partially support previous findings. General intelligence proved to be positively related to some aspects of self-esteem, both in females and males. General self-esteem strongly relies on both intelligence and physical beauty as seen by others, as well as on self-rated beauty, but not on self-rated intelligence. Both self-rated intelligence and beauty proved significantly related to some aspects of self-esteem. As expected, there was no relation between self-rated and other-rated intelligence/physical beauty. Overall, a very strong social component of self-esteem as related to intelligence was indicated in females, as well as very significant achievement component in males.

Keywords: *correlation, mental ability, physical beauty, self-evaluation, students*

Introduction

It is often said that there is no more important measure of an individual's own worth but the one of how highly they rate it. An inherent human need, as determined by a Canadian psychotherapist Branden (2001), to experience and to estimate oneself as competent enough to cope with basic life challenges and as sufficiently worthy of reaching and experiencing happiness, underlies the concept of self-esteem. The literature (Baumeister, Campbell, Krueger, & Vohs, 2003; Ellis, 2005; Judge & Bono, 2001; Miller & Moran, 2006; Mone, 1995; Shrauger & Rosenberg, 1970) abounds with many other provisions of self-esteem the meanings of which are focused on several basic attributes, such as personal opinion and experience of their own, value, competence, and relevance, as a person in their entirety. Emphasizing that the failure to satisfy this need can lead to anxiety, chronic general insecurity and hypersensitivity to any comment or criticism, bordering depression or aggression, Branden (2001) lists six pillars of self-esteem: mindfulness, self-acceptance, self-responsibility, self-assertiveness, purposefulness, and personal integrity. Yet, even amidst an evident scant selection of literature in this area, the apparent absence of an attempt by authors to make a comprehensive list of agents of self-esteem may be relatively surprising. Here, relying on the usual experiential framework, a number of factors could be referred to, ranging from personal ones such as perception and assessment of one's own appearance, i.e., physical attractiveness (with a full spectrum of subcomponents), over the general mental (intellectual) competence, social skills, efficiency and similar psychological parameters in the roots of self-perceived success, to perception and assessment of socio-economic, class, national, racial and other wider attributes originating from the family, environment and society.

Needless to say, such taxonomy of the agents of self-esteem is not the goal of this study. The researchers' attention is focused on two of them which, according to the wider logic and experiential platform, could have a substantial position in the anatomy of self-esteem. The first one is *intelligence*, i.e. general intellectual ability, as one of the confirmed attributes of value of the inner self. The second one is *physical attractiveness (beauty)*, as a possible conceptual substrate of value of the external and apparent as attributes of the self-concept.

A possible explanation of the link between intellectual ability and self-esteem may be traced following the higher general "functional competence" (Gottfredson, 1997) in people with higher IQ, which usually supports achievement of commonly valued social ends – an obvious self-esteem booster, indeed. On the other hand, according to Naillon (2004), a sort of self-fulfilling prophecy related to poor performance (caused by lower IQ), usually socially disfavored, may eventually result in poor self-esteem in people with lower IQ. In one of the pioneering studies in the field, Simon & Simon (as cited in Naillon, 2004, p. 1) reported a significant correlation between self-esteem and intelligence in a sample of fifth-graders, specifying verbal intelligence as more strongly associated to self-esteem. Findings from a more recent study suggest a low positive correlation, as $r=.18$, between general mental ability and core self-evaluations (Judge, Hurst & Simon, 2009), or even lower, as $r=.12$, between non-verbal intelligence and self-esteem (Kaya & Oğurlu, 2015). There are studies, however, that failed to establish a direct relationship between IQ and self-esteem, likely due to usage of different measuring tools (Leonardson, 1986; Naillon, 2004).

Besides plenty of articles with a traditional literary or philosophical discourse, in the last two or three decades, the psychological dimensions of physical attractiveness (attractiveness, beauty - terms used interchangeably in this text) also have gradually become a prolific field of empirical research, leaving the outskirts of the science of psychology. This field contains several inspirational thematic nuclei, dealing with the distinctive personality profile of physically attractive people, with special emphasis on extremely intriguing stereotypes about their (higher) intelligence, (privileged) social treatment and (higher) social success and status, to the (distinctive) strategies in their social relations (Bates, 2007; Denny, 2008; Feingold,

1992; Gottfredson & Deary, 2004; Hamermesh & Biddle, 1994; Mobius & Rosenblat, 2006; Swami, Furnham, Georgiades, & Pang, 2007). Attractiveness may affect the self-esteem in several ways, with warmth of reception and approval by others possibly being among the most explicit ones (Harter, 2006; Judge et al., 2009). Such feedback is usually given to attractive individuals quite early, sometimes literally during early childhood (Langlois, Ritter, Casey, & Sawin, 1995). In terms of position of school as a core agent of socialization, it should be noted that academic and intellectual competences of attractive pupils have been consistently proven to be evaluated more positively by others (Jackson, Hunter, & Hodge, 1995; Langlois et al., 2000). Moreover, even close and familiar individuals (parents, siblings, partners, co-workers, etc.) who know them very well show proneness to judge them via positive bias (Crocker & Luhtanen, 2003; Langlois et al., 2000). Attractive individuals, generally, receive more attention being subject of more positive interactions from other people and fewer negative ones as well. This is obviously a convenient social platform to boost the self-esteem (Baumeister et al., 2003). Particularly broad body of research reports on a significant boosting role of physical attractiveness for self-esteem in academic settings (Branden, 2001; Crocker & Luhtanen, 2003; Erol & Orth, 2011; Hamermesh & Biddle, 1994; Holtzman & Strube, 2010; Judge et al., 2009; Langlois et al., 2000). Attractive students achieve higher grades, which could result in higher level of education (Erikson, Goldthorpe, Jackson, Yaish, & Cox, 2005; Guay, Larose, & Boivin, 2004) and, subsequently, in better earnings (Bowles, Gintis, & Osborne, 2001; Erol & Orth, 2011; Hamermesh & Biddle, 1994; Langlois et al., 2000; Shinnars, 2009; Umberson & Hughes, 1987). In spite of plenty of models of self-esteem and its position in the self-concept (all of them assuming some link to the appearance/attractiveness), a considerably minor quantity of published studies address the accurately measured correlations between the two entities (Mruk, 2006). A comprehensive meta-analysis of 38 samples, a bit shy of 5,000 respondents overall (Feingold, 1992), suggests a significant positive correlation of $r=.32$ in females and $r=.27$ in males between self-rated attractiveness and self-esteem, but only a minor one ($r=.09$ in females and $r=.02$ in males) in case of other-rated attractiveness. Later research findings suggest a rather mixed picture, ranging from extremely strong positive correlation ("staggeringly high"), up to $r=.70$ or even $r=.80$ (Harter, 1993, p. 9) between global self-worth and perceived own physical appearance, over slightly smaller but still very strong, $r=.59$, in case of self-rated attractiveness (Diener et al., 1995), to much more modest correlations of only $r=.12$ between self-confidence/self-esteem and attractiveness in both children and adults (Langlois et al., 2000), or $r=.20$ between core self-evaluations and attractiveness (Judge et al., 2009).

Finally, the (possible) relation between intelligence and physical beauty emerges as an undoubtedly attractive stereotype, extensively discussed not among psychologists only, but also catching the attention of philosophers, anthropologists, evolutionary biologists, historians, theorists of culture etc. There is a traditional thesis in literature and media, existing for many years (without doubt attractive per se, and with many supporters), that more intelligent people may be physically more attractive, while individuals with a lower scale of intellectual capacities may be less gifted in terms of physical attractiveness. A possible biological support to this thesis comes from the concept of inherently positively inter-correlated sexually desirable traits, as intelligence and attractive appearance certainly are, that gradually increase their own presence into the human gene pool, simply due to production of a statistical associations between alleles affecting the two traits (Buss & Barnes, 1986; Kenrick, Sadalla, Groth, & Trost, 1990). Social psychologists, from the other hand, argue the possibility that visible characteristics may affect the individual's social status. That causes perceivers to generate matching expectations about other traits, so that an attractive individual will likely be assumed as intellectually and socially more competent (Kniffin & Wilson, 2004; Langlois et al., 1995; Mobius & Rosenblat, 2006). A comprehensive recent list (Mitchem et al., 2015) of present empirical studies of the correlation between attractiveness and intelligence (41 in

total, published between 1932 and 2014) presents inconsistent findings, with 17 studies reporting significant positive correlation (up to $r=.35$) and 9 reporting the opposite result, i.e. negative correlation (up to $r=-.43$). Their own survey (Mitchem et al., 2015) failed to confirm a significant correlation ($r=.07$).

Method

Research question, hypotheses and variables

The primary research question of this paper is to identify the assumed connections of various aspects of self-esteem with general intellectual ability (objectively measured, self-estimated or estimated by others) and with physical attractiveness (self-estimated or estimated by others). The relation between intelligence and physical attractiveness will be tested as well. As previously stated, psychology considers one's self-esteem as one of the core criteria of one's own perceived worth, in terms of affective basis on which individuals judge their own competency to cope with basic life challenges and reach a realization of their own potentials. In this context, both practical and academic contribution of this research may lay in further clarification of the position of the two notable human attributes, such as intellectual ability and physical attractiveness, as relevant agents of self-evaluation, i.e. self-esteem.

Given the results of previous findings, three research hypotheses will be tested: (1) *measures of self-esteem and intelligence (both measured and subjectively estimated) are positively correlated*, (2) *measures of self-esteem and physical attractiveness (estimated subjectively) are positively correlated, too*, and (3) *measures of intelligence and physical attractiveness may be correlated, either positively or negatively*.

The research approach of the "ex-post facto" type, on which the research process is based in this paper, naturally relativizes the traditional categorization of variables as criterion and independent (behavioral and stimulus) ones, a relation additionally emphasized by a correlational approach employed in this study. However, given the supposed relevance in the context of self-esteem, the respondent's gender will be treated as a moderator variable. Hence, the projected statistical calculations will be computed for each of the two sexes separately.

Instruments

In this study, the measurement of individual differences was performed using three measuring instruments.

As measures of self-esteem, scores on the S. Coopersmith's SEI, i.e. Self-Esteem Inventory (Coopersmith, 1981; 1989) were used, aiming to the subscale scores only. This inventory consists of four subscales, 46 items in total (revision form from 1984), which represent four domains of self-esteem: general self (22 items), social self (peers, 8 items), family self (parents, 8 items) and academic self (school, 8 items).

J. C. Daniels' Test of Figure Reasoning (FRT) was used to measure the general intellectual ability. It consists of 45 figural (similar to Raven's Progressive Matrices) items. In terms of R. Cattell's concept of two general factors of intelligence (Cattell, 1981), FRT measures the fluid intelligence (considering the figural material relations as one of its major structural elements), with estimated saturation of about 80% (Daniels, 1962).

An anonymous survey sheet with listed names of all respondents in attendance was given to respondents, seeking a three-point estimation (above-average, average, below-average) of the level of (a) physical attractiveness of each individual from the list, including oneself, and (b) intelligence of each individual from the list, including oneself, too.

The SEI and the FRT test of intelligence underwent routine checks of reliability, which signalized a satisfactory level of internal consistency: SEI (Cronbach Alpha, 203 respondents) in

the range from .73 to .82, depending on the subscale; FRT (Cronbach Alpha, 203 respondents) .89.

Sample

The sample consisted of a total of 203 subjects, all students of the St. Clement of Ohrid Faculty of Teacher Education in Skopje. The respondents were taken from both primary education (n=155) and preschool education (n=48) departments. Given the strongly biased gender structure of the recruited students enrolling in this sort of studies in Macedonia, with a traditional abundance of female students and a considerable minor proportion of males, the sample itself largely mirrors this bias, consisting of 171 females and 32 males. In terms of age, the whole sample emerges homogenous (19-24).

All respondents were students in the second or third year, so researchers assume they know each other well enough for qualified estimation of both intelligence and attractiveness in each individual in attendance. In order to preserve the necessary level of familiarity among the respondents, the estimations of others' intelligence and attractiveness were organized to be performed in four separate subsamples: (a) primary education, second year; (b) preschool education, second year; (c) primary education, third year; (d) preschool education, third year.

Data analysis

The data matrix is dominated by variables of scale type, represented by measurement results on both self-esteem inventory and test of general intelligence, as well as the *received* estimations from others (of both intelligence and physical beauty), that are in fact arithmetic means. The ordinal level of measurement is represented in form of three-point self-estimates of both intelligence and physical beauty.

Taking into account the nature of the variables and the levels of measurement mentioned above, both linear (Pearson) and range (Spearman) correlation, as well as regular parametric differential tests (ANOVA and t-test for independent samples) were employed. The usual set of descriptive parameters (frequencies, arithmetic means, standard deviations, etc.) was used occasionally, as supporting indicators throughout the data analysis.

Data processing was carried out in the statistical package IBM SPSS 20.0 (Statistical Package for the Social Sciences).

Results

A brief review of the descriptive data may be insightful, so prior to testing the hypotheses we would offer a glimpse into this matter (Table 1). Scoring on the SEI inventory fits the general range of norms for the European and American population (Blascovich & Tomaka, 1991; Coopersmith, 1981; 2002; Guillon, Crocq, & Bailey, 2003; Hills, Francis, & Thomas, 2007). Subtle differences in scoring between female and male respondents were not confirmed as statistically significant (t-test for independent samples), which is in accordance with previous findings (Coopersmith, 1981; 2002; Mann, Hosman, Schaalma, & de Vries, 2004; Myhill & Lorr, 1978). Slightly higher general and family-based self-esteem is noticeable in females, while male respondents score somewhat higher on the social and the academic self-esteem. There is no statistically confirmed difference between females and males in estimations of both intelligence and physical attractiveness (Table 1), although it is noticeable that male respondents are prone to somewhat higher self-evaluations on both variables, which is also consistent with previous research data (Furnham, 1999; 2001; Furnham & Fong, 2000; Kanazawa, 2004; Oppenheimer, 2003). Males also received slightly higher estimates by their colleagues, again with respect to both variables. The difference between females and males in the general mental ability (FRT), as can be seen (Table 1), is almost negligible.

Table 1
Descriptive data and gender

	Females (N=171)					Males (N=32)				
	M	SD	Skew.	Kurt.	range	M	SD	Skew.	Kurt.	range
SEI general	15.82	2.38	-0.06	-0.27	12	15.72	2.74	-0.28	-0.63	11
SEI peers	5.96	1.00	0.04	-0.48	4	6.28	0.96	0.32	-0.71	3
SEI family	5.58	1.11	0.29	-0.65	4	5.19	1.18	0.25	-1.06	4
SEI academic	5.54	1.15	0.20	-0.79	4	5.78	1.04	0.10	0.05	4
FRT (IQ test)	31.44	4.22	0.08	-0.40	19	31.78	5.01	0.27	-0.90	18
IQ by others	2.00	0.28	0.38	0.88	1.61	2.10	0.37	0.41	-0.13	1.44
IQ by oneself	2.45	0.56	-0.32	-0.93	2	2.53	0.57	-0.70	-0.51	2
PA by others	1.98	0.27	0.36	1.88	1.65	2.05	0.31	0.20	0.23	1.27
PA by oneself	2.25	0.71	-0.41	-0.96	2	2.38	0.61	-0.40	-0.58	2

The data presented in Table 1 indicate some other noteworthy relations. It is evident that self-ratings of both intelligence and physical beauty are noticeably higher than the other-ratings, a tendency statistically significant in both genders. The statistical check confirmed that self-rated intelligence in both genders is significantly higher than other-rated (females: $t=9.38$, $df=340$, $p<.01$; males: $t=3.57$, $df=62$, $p<.01$). Obviously, both female and male respondents show clear tendency to overestimate their own intelligence in comparison to estimations given by their peers in the group. In addition, the low (in the female group practically non-existent) rank-correlation between self-rated and other-rated intelligence (females: $r=-.001$, $p>.05$; males $r=.16$, $p>.05$) further suggests absence of a real, tangible connection. In other words, the estimation of one's own intelligence in this sample barely corresponds to the estimation given by others.

Very similar are the relationships among estimates of physical attractiveness. Self-rated beauty is consistently higher than other-rated, in both females ($t=4.60$, $df=340$, $p<.01$) and males ($t=2.65$, $df=62$, $p<.01$), which again reveal a visible tendency to overestimate one's own attribute over estimations given by peers in the group. Again, very low correlations are recorded between self-rated and other-rated beauty (females: $r=-.044$, $p>.05$; males: $r=.099$, $p>.05$), suggesting that the one's own rating of physical attractiveness does not correspond to estimations made by others.

The testing of Hypothesis 1 is graphically summarized in Table 2, showing the correlations between (a) measures of self-esteem, as scores on the four subscales of SEI, and (b) various indicators of general intellectual ability, as scores on the FRT, other-rated and self-rated intelligence. Given the position of gender as a moderator variable, the calculations were computed separately for the females and the males.

Table 2
*Spearman*** & Pearson correlations: self-esteem and intelligence (sig<.01**; sig<.05*)*

	Females (n=171)			Males (n=32)		
	FRT	Intelligence by others	Intelligence by oneself***	FRT	Intelligence by others	Intelligence by oneself***
SEI general	.263**	.343**	.053	.475**	.536**	.159
SEI peers	.221**	.129	.286**	-.041	.131	.183
SEI family	.006	.108	-.067	-.020	.048	-.299
SEI academic	-.050	-.003	-.009	.530**	.455**	.319

As can be seen, self-esteem is significantly positively associated with the score on the test of intelligence (*females: $r=.26, p<.01$; males: $r=.48, p<.01$*) as well as with other-rated intelligence (*females: $r=.34, p<.01$; males: $r=.54, p<.01$*), but not with self-rated intelligence (*females: $r=.05, p>.05$; males: $r=.16, p>.05$*). A remarkable divergence along the gender line can be seen in two other aspects of self-esteem. Evaluation of the social self-esteem (me and peers) is positively associated with intelligence, both as a test score ($r=.22, p<.01$) and a self-estimation ($r=.29, p<.01$) only in girls, but not in their male colleagues. Quite the opposite situation emerges in the evaluation of the academic self-esteem (based on grades and success in school). This aspect of self-esteem is notably positively correlated with scores on the test of intelligence ($r=.53, p<.01$) and with other-rated intelligence ($r=.46, p<.01$) only in males, while in girls there is virtually no correlation. It might be noteworthy to point towards the considerably high correlation between academic self-esteem and self-rated intelligence in males, which however was not confirmed to be statistically significant ($r=.32, p>.05$), presumably due to the small number of male respondents, similar to the fairly high negative correlation between the family self-esteem and the self-estimated intelligence ($r=-.30, p>.05$).

Overall, based on this section of the analysis (Table 2), it may be concluded that intelligence in females is associated primarily with the social (me and peers) component of self-esteem. In case of male respondents, this connection is established with the academic (me and school) self-esteem. This is a sufficient argument to confirm Hypothesis 1, which postulated a positive correlation between measures of self-esteem and intelligence.

Moving a bit away from the hypothesis itself, we consider it possibly insightful to examine whether the self-esteem is somehow related to the degree of accordance between self-rated and other-rated intelligence, a parameter on which respondents were statistically divided into three categories: overestimated ($X>M+0.5SD$), optimal ($M-0.5SD\leq X\leq M+0.5SD$), and underestimated ($X<M-0.5SD$) self-rated intelligence. Statistical check (one-way ANOVA) revealed a tangible difference ($F=4.10, df=2, p<.05$) only in females, on the subscale of social self-esteem (me and peers). The subsequent post-hoc test (Scheffe) locates the difference between the groups with overestimated ($M=6.13$) and underestimated ($M=5.36$) self-rated intelligence. In other words, the tendency among female respondents to overestimate their own intelligence in comparison to the other-rated one may be associated with higher social self-esteem (me and peers). Such a tendency was not confirmed in males.

Turning now to the next section, i.e. self-esteem as a function of physical attractiveness (Table 3), it is obvious that the general self-esteem is positively associated with the other-rated attractiveness, regardless of gender (*females: $r=.22, p<.01$; males: $r=.49, p<.01$*). There is a connection with the self-rated attractiveness, too (*females: $r=.26, p<.01$* , while in *males* the correlation is noticeably high, but not statistically significant, presumably due to limited number of respondents: $r=.33, p>.05$).

Table 3

*Spearman*** & Pearson correlations: self-esteem and physical attractiveness (sig<.01**; sig<.05*)*

	Females (n=171)		Males (n=32)	
	Physical beauty by others	Physical beauty by oneself***	Physical beauty by others	Physical beauty by oneself***
SEI general	.215**	.257**	.485**	.331
SEI peers	-.010	.305**	-.008	.016
SEI family	.159*	.086	-.050	.029
SEI academic	.081	-.012	.010	.220

It can be further observed (Table 3) that among girls, similarly to the already discussed self-rated intelligence, the self-rated attractiveness may be associated with the social self-esteem ($r=.31, p<.01$), while such a relation is non-existing in males. In girls, a significant

positive correlation ($r=.22$, $p<.01$) between family self-esteem and other-rated physical beauty is noticeable as well, again a relation non-existing in male students. As for the males, a respectable high positive correlation between academic self-esteem and self-rated attractiveness appears, but again with no statistical verification of significance ($r=.22$, $p>.05$), likely due to the same reason (assumed limited sample of males).

The primary impression from this segment of statistical analysis (Table 3) is that the relationships between self-esteem and estimated attractiveness may be considerably similar to the ones between the self-esteem and estimations of intelligence, previously discussed. This could suggest a deeper conceptual congruence between subjective estimations of intelligence and of physical attractiveness. Nevertheless, results presented in this section give a good deal of support to Hypothesis 2, confirming postulated relations between measures of self-esteem and physical attractiveness.

We performed another sideways check over here, investigating now whether self-esteem is somehow linked to the degree of accordance between the self-rated and other-rated attractiveness. Respondents were again statistically divided in three categories: overestimated ($X>M+0.5SD$), optimal ($M-0.5SD\leq X\leq M+0.5SD$), and underestimated ($X<M-0.5SD$) self-rated attractiveness. The results (one-way ANOVA) proved virtually identical to those of the previous calculation (performed around discrepancies between the estimates of intelligence). Again, a significant association only in girls was ascertained in the social self-esteem ($F=9.59$, $df=2$, $p<.01$), with a difference located (Scheffe post-hoc test) again between the groups with overestimated ($M=6.19$) and underestimated ($M=5.33$) self-rated physical beauty. No significant relationships were recorded in males, again. These findings give a further reinforcement to the previous conclusion about existence of possible conceptual congruence between the subjective estimations of intelligence and of physical attractiveness. Additional light on this issue will be cast through the forthcoming final section of statistical analysis.

Relations between intelligence (measured or estimated) and physical attractiveness (estimated) are presented in the last section of analysis. As can be seen from Table 4, the FRT scoring is not closely related to the estimates of attractiveness, with the relative exception of the detectable but not sufficiently high for statistical significance ($r=.21$, $p>.05$) correlation with the other-rated attractiveness in males. Unlike the scores on the FRT, the other-ratings of intelligence may be closely connected to other-ratings of physical beauty, a tendency clearly present in both genders (females: $r=.32$, $p<.01$; males: $r=.35$, $p<.05$). This link suggests a clearly visible association between the level of physical attractiveness and the degree of intelligence as estimated by others. In other words, a higher other-rating of one's physical attractiveness means, on average, a higher other-rating of his/her intelligence too, and vice versa. On the other hand, self-ratings of intelligence and of attractiveness emerge similarly related/associated, but only in girls (females: $r=.18$, $p<.05$; while in males the correlation is even higher, but statistically not significant due to the limited number of respondents: $r=.25$, $p>.05$). Put differently, a higher self-rating of physical beauty in female sample also means, on average, a higher self-rating of intelligence, and vice versa. It seems that the described tendency may exist in males, too, but this claim failed to be statistically confirmed.

Table 4

*Spearman*** & Pearson correlations: Intelligence and physical attractiveness (sig<.01**; sig<.05*)*

	Females (n=171)		Males (n=32)	
	Physical beauty by others	Physical beauty by oneself***	Physical beauty by others	Physical beauty by oneself***
IQ FRT test	-.112	-.019	.206	-.090
IQ by others	.323**	.074	.351*	.106
IQ by oneself***	-.051	.181*	-.095	.248

Discussion

Meaning a subjective perception and assessment of one's own worth as individual, the self-esteem is probably one of the most extensively investigated constructs in psychology and the wider area of social sciences (Bleidorn et al., 2016; Williams & Currie, 2000), with a body of over 35,000 published articles mainly focused on origin, causes and consequences of the self-esteem (Bleidorn et al., 2016). It seems, however, that empirical studies of the relations between self-esteem and some of its agents (intelligence and physical attractiveness for instance) appear in a significantly lesser amount. On the other hand, much of this body of studies deal with or at least address the position of gender as a relevant factor in the context of self-esteem (Erol & Orth, 2011; Williams & Currie, 2000). Findings in this area mainly suggest somewhat higher self-esteem in males than females (Coopersmith, 1981; 2002; Kling, Hyde, Showers, & Buswell, 1999; Myhill & Lorr, 1978), but the differences' magnitude emerged ambiguous. However, reports suggesting mostly minor differences, insufficiently explicit for statistical verification, appear the most common (Bleidorn et al., 2016; Coopersmith, 2002; Mann et al., 2004; Myhill & Lorr, 1978). In this context, results on the SEI inventory in our sample lay in low synergy to the previous data, primarily because of the negligibly higher level of the general self-esteem in girls. Females also scored somewhat higher on the family self-esteem, while their male colleagues showed a bit higher self-esteem based on the social and on the academic self. In general, this part of our data is moderately consistent with previous findings (Coopersmith, 1981; Erol & Orth, 2011; Potard et al., 2015; Trzesniewski, Donnellan, & Robins, 2003).

Notably more prominent accordance with previous findings is indicated in the case of relationship between self-esteem and intelligence. Our results suggest a pretty clear link between the measured general intellectual ability and general self-esteem, which is consistent to the previous findings in the field we are aware of, bearing in mind that other studies had a different, quite heterogeneous choice of measuring instruments and research drafts (Judge et al., 2009; Kaya & Oğurlu, 2015; Leonardson, 1986; Naillon, 2004). It seems that the elements of the generally sharper assessment of the complexities of reality (higher intelligence) in this sample may be definitely related to the higher self-esteem. However, the sharper insight into the general coordinates of one's own existence supported by higher intelligence in this case probably implies some bias, boosting the elements that speak in favor of higher self-esteem, unlike the ones that suggest lower self-esteem that are apparently suppressed. In other words, higher intelligence "registers" only elements of one's own position in favor of oneself, while "ignoring" the others. The intelligence ratings given by colleagues have a similar relation, i.e. a higher positive correlation with general self-esteem, among respondents of both genders. Given the high saturation with non-cognitive factors in the implicit perceptions of intelligence (Hong, Chiu, Dweck, Lin, & Wan, 1999; Nicholls, Patashnick, & Mettetal, 1986; Robins & Pals, 2002), it seems that certain non-cognitive behavioral elements of the higher self-esteem, present in everyday behavior, could be a factor of the higher evaluation of intelligence made by others (peers, in this case). This relation, however, is probably just the tip of the iceberg of some presumably deeper relationship, indicated by the higher inter-correlations between the scored (IQ test) and other-rated intelligence, i.e., the unexpectedly high degree of precision of estimates of intelligence given by colleagues, particularly in male respondents (*females*: $r=.222$, $p<.01$; *males*: $r=.588$, $p<.01$). On the other hand, the self-rated intelligence is related neither to the general self-esteem nor to the other two measures of intelligence (IQ test and other ratings). Within the internal triangle of measures of intelligence in this study, it seems that the self-estimations are precisely those which exist relatively autonomously in relation to the other two, which may be another confirmation of the important non-cognitive component into their core (Ganey, 1981; Furnham & Fong, 2000; Furnham, 2001).

Unlike the general self-esteem, its partial aspects measured with the SEI may be gender-sensitive in terms of its relation with intelligence. The high positive correlation between the social self-esteem (me and peers) and IQ scoring in females, suggesting a dominant position of the social component of self-esteem among more intelligent girls, is not confirmed in males. In the male sample, on the other hand, intelligence appears highly positively correlated with the academic self-esteem (me and school), something completely non-existing (practically, there is no correlation whatsoever) in females. Obviously, higher general intelligence in females may be in synergy with experiencing the peer group as a reference social framework, while in males it seems to be pointed elsewhere; i.e., towards the academic performance as a basic platform for assessment of one's own worth. In addition, the social self-esteem in females proved also positively associated with the self-rating of intelligence, which could be interpreted as further confirmation of strength of the non-cognitive component in the self-estimation of intelligence. Another reason in favor of this interpretation may be the confirmed association of the girls' proneness to overestimate their own intelligence compared to the other-ratings, on one hand, with the higher evaluation of the social self-esteem, on the other hand. Conversely, girls who underestimate their own intelligence (compared to estimation given by the peers) emerged prone to significantly lower levels of social self-esteem. It may be noteworthy that in girls, both the family self-esteem and the academic self-esteem do not show any connection with intelligence. In this segment, another noteworthy detail may be the fairly higher negative correlation, although not confirmed as statistically significant, between family self-esteem and self-estimation of intelligence in males. We have no explanation of this relationship (the same is absent in females), except that it is probably a possible artifact of the relatively small sample (32 male respondents).

The next section of the results indicates a strong relation between attractiveness and self-esteem, which is largely consistent with the previous findings. A comprehensive meta-analysis (Feingold, 1992) specifies a relatively high average correlation ($r=.32$ in females, $r=.27$ in males), with other reports ranging from the relatively low but statistically significant $r=.12$ (Langlois et al., 2000) to the high correlations, as $r=.59$ (Diener et al., 1995), or even extremely high, as $r=.80$ (Harter, 1993). Our correlations in the female sample emerge slightly less prominent ($r=.22$ between general self-esteem and other-rated, $r=.26$ with self-rated attractiveness) than the average reported by Feingold ($r=.32$ in females), but still statistically significant ($p<.01$). Relatively surprising could be the higher correlations in males ($r=.49$ with other-ratings, $r=.33$ with self-ratings, the latter not being statistically significant, presumably due to a small male sample) compared to the previous data which suggest a stronger connection in females (Feingold, 1992, $r=.27$ in males). A possible rationale for this gender-sensitive bias might be traced taking a look towards the dominant traditional socio-cultural matrix and the resulting values, which assign higher significance to the beauty of the woman as an asset of her worth, compared to the one assigned to men (Bale & Archer, 2013; Leary, Haupt, Strausser, & Chokel, 1998). In our case, a promising direction might be the prominent women-targeting impact of the proliferated media-originated influences of everyday life, which may impose the paradigm that only (external) beauty is real, worthy and as such deserves to be valued. In our opinion, this social phenomenon shows additional signs of evolution towards some broader pattern of experiencing, of evaluating, and even of conceptualizing the other and the otherness in general manner, according to which not only human relationships/affairs and transactions, but also the attitude towards matters in general, shows a noticeable tendency to rely entirely on the external appearance embodied through the categories of form, style, color, "artistic impression", "image", and so on. The described cultural model may possess potential to mitigate the traditional gender boundaries, taking an unexpected role in gradually stronger position of physical beauty as a factor of self-esteem in

males. Another intriguing relation derived from this segment of the analysis is that general self-esteem simultaneously shows high positive correlation with both other-rated and self-rated attractiveness, in matrix where the latter two mutually correlate fairly low. In other words, even in the absence of a close relationship between self-rated and other-rated physical beauty, it seems that both of them have a significant position in the basis of the self-esteem. It might be another confirmation of the strength of the position of physical appearance as a vital element of the self.

In terms of relations between the attractiveness and partial aspects of the self-esteem, a noteworthy moment may be the positive correlation (moderate $r=.31$) between social self-esteem (me and peers) and self-rated attractiveness in females. This is a virtually identical link to the previously discussed one between social self-esteem and intelligence. Moreover, such one is again not confirmed in males. Obviously, experiencing and rating one's own appearance may have to some extent a strong position in the background of social self-esteem, a constant known from the literature (Bale, 2010; Crocker & Luhtanen, 2003; Eagly, Ashmore, Makhijani, & Longo, 1991; Leary et al., 1998; Patrick, Neighbours, & Knee, 2004). Another interesting point might be the relatively low but statistically significant correlation ($r=.16$) between family self-esteem with other-rated attractiveness, possibly indicating a role of personal appearance as a factor of some aspects of family dynamics (Eagly et al., 1991; Franzoi, 2001). We also want to point to the relationship between females' overestimation of their own attractiveness compared to other-rated one and the higher evaluation of social self-esteem. Conversely, females prone to underestimate their own attractiveness showed significantly lower levels of social self-esteem. Being virtually identical to the previously-discussed link between estimations of intelligence and self-esteem, this is surely another trace towards assumed conceptual congruence between subjective estimations of intelligence and of physical attractiveness.

Earlier studies quite firmly suggest that non-physical factors may take a significant position as important determinants of the reception and the evaluation of physical attractiveness. Researchers (Thornhill, 1998; Volland & Grammer, 2003; Zebrowitz & Lee, 1999, as cited in Kniffin & Wilson, 2004) highlight the wide range of factors which, in situations of assessment of individuals who know each other, may have even a dominant position over the physical ones (height, build, proportions of the limbs, torso and body parts, facial proportions ratios, etc). In domains of personality, the available literature mostly emphasizes the extraversion, honesty, altruism (Bates, 2007; Feingold, 1992; Gangestad & Simpson, 2000; Hamermesh & Biddle, 1994), dominance and sociability (Jensen-Campbell, Graziano, & West, 1995), narcissism (Holtzman & Strube, 2010), self-realization (Itai & Hee, 2008), and other mainly character traits. It is all an additional reason for, at least according to our results, evident mismatch among the estimations, both in terms of the grade itself (self-ratings go significantly higher than other-ratings) and accuracy (mutual "synchronicity"). In other words, the self-ratings of attractiveness are higher (as expected) than the other-ratings, which indicates proneness to evaluate *one's own physical attractiveness significantly higher than colleagues do*. This is not unknown in the literature (Anderson, John, Keltner, & Krings, 2000; Eagly, et al., 1991; Eastwick & Hunt, 2014), being commonly interpreted as expected reflection of the natural bias towards personal psychological benefits (Eagly et al., 1991; Shinnars, 2009). What is relatively surprising in our results may be a rather poor accuracy, in terms of low synchronization (very low correlation between) of the estimates originating from the two "sources": other-ratings and self-rating of the same individual emerged quite divergent from each other, which means that if the opinion of the "majority" (classmates, others etc.) is being accepted as authoritative, the respondents from this sample clearly misjudged (overestimated) their own physical attractiveness, by a significant margin. We are aware of mainly different findings in the available literature (Lemay, Clark, & Greenberg, 2010; Marcus & Miller, 2003), in which the relative consistency between the self-estimation and estimations given by others is

interpreted as a result of awareness of the existing conventional attributes of beauty (Lemay et al., 2010).

Taking a short flashback to the intelligence, discussed in the previous section, we can recall almost identical relation. To be exact, the self-estimations of intelligence are altogether also visibly higher (as expected) than the estimates provided by others. In other words, the surveyed students go much further than their colleagues do in estimating their own intelligence, and this finding is not surprising according to the existing stereotypes (DeYoung, 2011; Furnham, Moutafi, & Chamorro-Premuzic, 2005; Kanazawa, 2011). Moreover, in this case again, the results indicate poor congruence between estimates originated from the two “sources”, or put differently, this means that estimations by others and the self-estimations of intelligence rather diverge. This again means that if the opinion of the “majority” (colleagues from the same study program) about the extent of one's intelligence is taken as authoritative, the major deal of individuals from this sample judged their own intelligence fairly inaccurately.

Finally, what remains to be commented is the apparent mutual compatibility of the other-ratings of the two attributes, i.e. physical beauty and intelligence, as well as the considerably high congruence between the self-estimations of these two attributes. Our results suggest that a higher estimate of attractiveness on average means a higher estimate of intelligence as well, and vice versa. Also, a higher self-estimation of one's own physical beauty, on average, means a higher self-estimation of one's own intelligence as well, and vice versa. These indicators should be expected, being consistent with previous data (Cunningham, Roberts, Barbee, Druen, & Wu, 1995; Denny, 2008; Herrnstein & Murray, 1994; Jensen, 1998; Kanazawa & Kovar, 2004), with an abundance of similar ideas about beauty, success, status, wealth, and even intelligence that are systematically nurtured in the modern pop culture, through popular literature, media and the Internet. Authors from this field often emphasize the strong “social” component (Jensen, 1998) in the implicit perceptions of the nature of intelligence, in which the intelligence itself is being spontaneously blended with plenty of other characteristics or achievements of the individual (Todoric & Zarevski, 2000), stressing the physical attraction itself as an apparent “barometer” of one's level of intelligence (Bates, 2007; Laland & Brown, 2002; Mobius & Rosenblat, 2006).

Conclusion

The findings presented in this paper, dealing with relationships among self-esteem, intelligence (both as measured by test and subjectively estimated) and physical beauty, showed a complex matrix of relations of mutual conditionality and determination. The relevance of the position of intelligence and of physical attractiveness as agents and determinants of self-esteem is generally confirmed. Scoring on the test of intelligence is positively associated with the general self-esteem regardless of gender, but gender differences arise in relationships between intelligence and the partial aspects of the self-esteem, wherein intelligence in females is associated primarily with the social, while in male respondents with the academic component of self-esteem. Estimates of intelligence provided by peers are also associated with the general self-esteem, while self-estimations are not. On the other hand, the general self-esteem is associated with the estimations of the physical attractiveness, wherein among female respondents, self-estimations are again related to the social aspect of self-esteem. Close relationships are established between the estimates of physical beauty and intelligence, in both estimates provided by others and self-estimates.

We would like to anticipate a possible practical contribution of these findings, mainly in terms of some new knowledge about the background of the self-esteem, particularly in future teachers. As previously stated, self-esteem itself reflects the outline of the personal opinion and experience of one's own value, competence, and relevance altogether. We emphasized the position of the personal agents of self-esteem, as the (real and perceived) mental ability

and the (perceived) appearance, pointing to their immediacy and straight-forwardness as personal attributes, usually assessed by others “at first sight”. In terms of academic contribution, we believe these results may shed some additional light on the anatomy of the self-esteem, undoubtedly a complex psychological construct itself which takes a core position in the basis of the wider self-concept. Confirming the hypothesized connections between self-esteem and both intelligence and physical attractiveness, we hope we strengthen the scientific knowledge about one of the possibly most influential well-being constructs in the modern psychology.

We are certainly aware of several potential weaknesses of the study. At first, the selection of measuring instruments may be relevant, imposing the question whether identical research procedure conducted with different measurement tools would offer the same results. A potential problem, in this context, could be the form designed by authors themselves, supposed to collect the subjective estimations of both intelligence and physical attractiveness: estimation in three categories is still only one of several possible options. Furthermore, the estimation of the physical attractiveness employed here assigns a single mark for a much wider entity, omitting possibility to evaluate partial aspects of the appearance on different levels. Certainly, a limitation of this paper is the uniform age, plus the homogenous educational group, as well as the socio-cultural environment in which the results were derived, which altogether significantly compromise a potential broader generalization of the findings. In view of the above mentioned, the outcomes of this study can objectively have a potential for detection of possible tendencies, with no pretense to provide solid, definitive conclusions.

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Inteligencija, samopoštovanje i fizička privlačnost kod studenata predškolskog odgoja i primarnog obrazovanja

Sažetak

Empirijsko istraživanje odnosa između opće inteligencije, samopoštovanja te subjektivnih procjena inteligencije i fizičke privlačnosti sprovedeno je na makedonskom uzorku studenata sveučilišta (ukupno 203). Podatci su bili prikupljeni uporabom tri mjerna instrumenta: testa TRL (test opće inteligencije), SEI inventara samopoštovanja (Coopersmith), te (3) anonimnog upitnika za procjenu privlačnosti i inteligencije svakog pojedinca sa liste uključujući i sebe. Izračuni korelacijskom metodom dali su rezultate koji su samo djelomice u sinergiji s prijašnjim nalazima. Opća inteligencija se kod oba spola pokazala pozitivno povezanom s nekim aspektima samopoštovanja. Opće samopoštovanje povezano je sa inteligencijom i fizičkom privlačnošću onako kako ih vide kolege, kao i sa samoprocjenom privlačnosti, ali ne i sa samoprocjenom inteligencije. Samoprocjene inteligencije i tjelesne ljepote pozitivno su povezane sa nekim aspektima samopoštovanja. Prema očekivanjima, nije uočena povezanost dobivenih procjena i samoprocjena, kako inteligencije tako i fizičke privlačnosti. U cjelini, socijalna komponenta samopoštovanja bi mogla biti u vezi sa inteligencijom kod studentica, dok je kod studenata muškog spola u takvoj poziciji akademska komponenta samopoštovanja.

Ključne riječi: *inteligencija, korelacija, samopoštovanje, fizička privlačnost, studenti*

Preliminary communication

The Relationship between Parental Education Level and the Parenting Style and the Social Behavior of the Child

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Abstract

This paper presents the results of the research on the independent and shared influence of the two predictors - parenting style and the level of the parents' education on the social behavior of the children. The research was carried out on a sample of 488 respondents – parents (244 families). The relation was established between the parenting styles – democratic, autocratic (authoritarian) and anarchic and the level of education – medium (ISCED level 3, 4, 5), high level (ISCED level 6 and higher) and diversified education – different for the two parents. The social behavior of their children (aged 5-7) was observed with a protocol for systematic observation.

Statistical indicators confirmed that there is a relation between the two independent variables and the social behavior of the children aged 5-7. Some of the parameters underlined the interconnectedness of the two predictors in influencing the dependent variable. The research showed that a medium level of education (ISCED level 3, 4, 5) has a more positive influence on some forms of social behavior which are present in families with democratic parental style than a higher level of education.

Keywords: *parenting style, social behavior, early childhood development, parents, parents' education*

Introduction

Research on family influence is usually dominated by the assessment of the impact of parental educational style as a part of the family climate. But, not less importance is also attributed to the influence of the educational status of parents on personality development. Today there are a lot of researches that define and humanize a direction of parents' influence on children's socialization. This paper uses data from the author's extensive research, which was carried out in the period from 2004 to 2006 (Koteva-Mojsovska, 2006). It takes into consideration the fact that the family is an institution that is slowly changing and there are always several steps behind social changes. From all the investigated aspects of the family influence on the child personality development, the data related to the connection of the parenting style and the educational level of the parents with the social behavior of the children will be examined here. Of course, the data used here are also updated and supplemented with the author's new knowledge related to the research topic (Koteva-Mojsovska, 2011; Koteva-Mojsovska, 2014; Sehu & Koteva-Mojsovska, 2015).

Diana Baumrind is the first scientist that formulated and described the basic prototypes of parenting styles (Baumrind, 1966). She had posted a fundamental classification that distinguishes three main parenting styles: authoritarian, authoritative (democratic) and permissive. The authoritarian parent applies strict control behavior over the children. In the permissive style parents prefer liberal behavior without parental control, while the authoritative or democratic parenting style applies balanced behavior that includes both - the control and liberality, which is a positive relation in the parent-child relationship (extensively in: Baumrind, 1966). Maccoby & Martin had later made adjustments to this division by adding two new parenting styles: 1) the indulgent style that supports high responsibility but low expectations, and 2) the neglectful parenting style, that is low on responsiveness and low on demands (Darling & Steinberg, 1993). There are a lot of other classifications of parenting styles which more or less coincide with the basic styles. For example, McLeod and Chafee (in Reardon, 1998, p.61) have defined four types of communication in the family relations: *laissez faire*; protective; pluralistic and consensual type (Reardon, 1998, p.61).

The research carried out in Skopje, the Republic of Macedonia, showed that most parental styles in this area were autocratic (postal), democratic and anarchic (more in: Koteva-Mojsovska, 2006). Therefore, in further consideration of this problem I will keep on explaining these parenting styles

Democratic parenting style refers to the mutual respect among the family members. Parents with this style respect children's needs, decisions and opinions. They are flexible and capable of empathy. Children whose parents practiced this style develop a proper self-concept, self-esteem, creativity, cooperation, initiative, tolerance and the like. Autocratic parenting style features with unlimited authority and power of parents over children. It is also called authoritarian (Maccoby & Martin, 1983; Darling & Steinberg, 1993) or rigid (Medić, 1997). In fact, this style is characterized by rigor, restrictive behavior and frequent punishment of children. These parents have high expectations but low responsiveness to their children. Children whose parents are authoritarian become introverted, without initiative and eagerness toward anything around them. They apply rigidity without initiative and creativity in their relationship with the environment. Their cooperation is lower compared to children of the democratic parental style. Their development goes in two directions: 1) they become aggressive and violent, without a sense of other people's emotions because they cannot understand themselves either; 2) they withdraw and cannot establish communication with the environment. Anarchic parenting style requires a great freedom in the upbringing of children. These parents are uninterested relating to behavior, needs and development of their children. They think that education is the responsibility of educational institutions. The upbringing of the child in these families is liberal to the point of inconstancy and neglect. It goes toward an

anarchy in the family relationship. As a consequence, it leads to anarchy in the organization of family functioning. This style is also called spontaneous (Grgin) and chaotic (Medić). Children from these families do not have a sense of confidence for reasons that they do not feel parental care. They often become servile and are often looking for love. Their infantile behavior frequently continues into their adult years. In communication with others these children often cause many incidents because they are trying to attract attention.

The educational level of parents also has an important place among other family factors that affect children's development. The greatest number of studies in this field focus on the influence of the family on a child's intellectual development and school achievement. Regarding the social behavior of children, it can be said that pedagogical behavior of parents has a greater impact on the social behavior of children than the impact of the parents' educational status does. Of course, the educational level of parents is only one of the possible factors that indirectly contribute toward a specific flow of this process. It influences the development of children through: the parent's attitude towards learning and toward the book in the family; allure of the profession and the job of the parent; higher awareness among parents regarding the educational effects of family, as well as a need for pedagogical culture and education; growing interest of parents in a child's success; higher communication status, etc.

Today, given the rapid development of science, culture, art and technology, especially with the great influence of the mass media, we cannot believe that only highly educated parents use democratic educational style, compared to those with lower educational status. In fact, today's parents with lower educational level also become aware of the family's role in child development and aware of the need for pedagogical awareness in favour of their corrective actions. On the other hand, as has already been explained, the personality of parents is also a determinant of their influences on the child's behaviour and on the degree of respecting the child's personality. Highly educated parents, however, have higher professional ambitions that emphasize their intolerant actions towards children's behaviour that leaves harmful consequences in development of the child's personality (more in: Koteva-Mojsovska, 2006).

Method

The research refers to the independent and shared relationship of the two predictors - parenting style and the parent's educational level with the social behavior of the children. The key questions were:

- Which parenting style mostly reflects differences in social behavior?
- Which educational level of parents is mostly connected with positive forms of social behavior in children?
- What is the difference between the separated connection and the common connection of two predictors (parenting style and educational status of parents) with the social behavior of children?

For data collection we used a questionnaire which was administered to 488 subjects – parents (244 families) and the protocol of systematic observing for detecting social behavior to children. When analyzing the data, we observed the presence of all levels of education - the same level and a different level within the same family, which set up the dilemma for their classification. Thus, we decided to classify them according to their level of education for those families where there is the same educational level of both parents and to form a special group where it is not the case. So, in the research the following educational levels of parents were assessed: the basic level (now in ISCED these are levels 2 and 3), the medium level (now in ISCED these are levels 4 and 5), the high level (now in ISCED this is level 6 and higher) and the diversified level of education of parents in the same family.

Within the educational styles (parenting styles), three of them were taken: democratic, autocratic (authoritarian) and anarchic.¹ The social behavior of their children aged 5-7 was observed² with the protocol for systematic observation. Three categories of social behavior were observed: cooperativeness, initiative and tolerance.

According to the nature of the variables, the following statistical procedures were used: percentage %, Chi-square test (χ^2), multiple correlation (R), Beta coefficients (β), Coefficient of contingency (C) and Cramér's (V) varies (0-1 value) - a measure of association between two nominal variables. Because the analysis found out some interesting results, we decided to count multiple correlations (R) as well.

Results

Parenting style and social behavior data

According to cooperativeness in children, we found that 69.23% of children who exhibit high cooperative behavior come from parents with democratic parenting style, opposed to 30.77% of children from the same style that are not cooperative. Behavior in children whose parents practice autocratic style shows the opposite situation - 70.59% of children in autocratic parenting style don't practice successful cooperation, while only 29.41% are cooperative. Anarchic parenting style doesn't leave substantial marks and differences in cooperative behavior in preschool children. The difference in cooperative behavior among children from these families, expressed in percentage, is 50% children who have a cooperative behavior versus 50% children who are not cooperative.

In cooperativeness among children whose parents practice democratic, autocratic, and anarchic educational styles, there is an obvious difference. Namely, the value obtained from the Chi-square ($\chi^2 = 24.768$), whose limit value is 9.210 for the degree of freedom 2 and at the significance level of 0.01, shows that there is a significant difference in the distributions of results. The coefficient of contingency (C= 0.339) and the Kramer factor (Kramer V = 0.360) also show a link between the independent variables on the one hand and the dependent variable on the other hand. It shows significant differences between different categories of the child's social behavior. Frequencies in distributions showed significant deviations from the expected theoretical frequencies, as well as from their minimum expected value (ft = 15.41), with the exception of anarchical educational style, which, however, did not reduce the difference between them.

The same difference in social behavior in children from families with different parenting styles can be detected in the child's initiative as a form of social behavior. Namely, 64.83% of the children who practice procedures to show initiative in their behavior come from families with democratic parenting style. They, in most cases, want to activate more friends toward realizing their ideas. They do not impose the ideas but want to make an active agreement with all friends about what and how they will play. What is characteristic of them is their need for including new items during the activity, and proposing new ideas for refreshing the current activity. Probably it is due to the child's natural inclination towards creation, which can develop smoothly and be encouraged in children whose parents use democratic style. Only

¹ The research conducted in the period between 2004 to 2006 in the territory of Skopje, Republic of Macedonia, which concerned the connection of the parenting style and social behavior of children, showed that the most frequent parenting styles, with 65% confidence in the findings, are: democratic, autocratic and anarchic parenting style (more in: Koteva-Mojsovska, 2006).

² Children at the age of 6-7 already show social competence that is related to the influence of the family environment and, if a certain social deviation is detected in this age, there are still opportunities to influence the pedagogical culture of parents and to develop parental personality, as well as opportunities for social development of children. All the anomalies in the behavior of parents toward children at this age leave permanent consequences in their social development (more in: Katz and McClellan, 197).

35.16% of these children do not manifest initiative in their actions. In this case, they play alone, often do not have ideas, quickly run away from the problem instead of seeking a solution to it and always wait for an initiative from someone else.

Children of the parents with autocratic parenting style show initiative in 38.23% cases, versus 61.77% of children whose actions did not reflect the initiative. However, in children whose parents practice anarchic parenting style there was no drastic difference between the positive and negative variants of initiatives. Positive variants of initiative were shown in 43.75% of them, while negative variants of initiative were found in 56.25% of children.

In the case of initiative, as a form of social behavior, we found a statistical confirmation of the significant difference between children whose parents have used different parenting styles. Chi-square test, with a value $\chi^2 = 12.035$, in degree of freedom 2, for which the limit value is 9.210, shows significant differences even at the level of 0.01. The coefficient of contingency ($C = 0.243$) and Kramer coefficient (Kramer $V=0, 251$) show relationship between the variables, again. In our case it is applied between the initiatives shown by the children on the one hand and parenting styles on the other hand.

Percentage values have shown that in most cases (68.13%) tolerant behavior is found in children whose parents use democratic parenting style. Their relationship to others' needs, suggestions and ideas is positive, without a sense of threat to their personal identity. Such behavior is interpreted with their parents' tolerance towards them, and with a great deal of mutual respect in the family. Little tolerance is found in 31.87% of children in families with democratic parenting. Probably it is due to other dominant influences on these children in terms of the impacts of their parents. The data analysis showed that 39.70% of the total number of children whose parents practice autocratic parenting style are tolerant, while 60.30% did not exhibit tolerant behavior. These children, as in the previously discussed forms of social behavior, again use quite a large number of activities in their behavior that are negatively targeted.

However, in children whose parents used more anarchic actions in education, tolerance as form of social behavior is found in 43.75% cases, while intolerance was demonstrated in 56.25% of them. It is interesting to note that in these children, in terms of tolerance, there is no greater difference between its negative and positive category. The difference, as well as in the case of the initiative, is in favor of most of the children who do not have tolerant behavior, but it is insignificant compared to the difference between those two categories that are observed in children of parents with democratic and of autocratic parenting style. However, in this case, also, children from families with anarchic parenting style are across both categories closer to the children of the autocratic parenting style than to the children of democratic parenting style.

The statistical parameters in this case again point out the significance of the difference in social behavior procedures between children from different parenting style. The Chi value, $\chi^2 = 14.259$, in 2 degrees freedom is again higher than the limit value of 0.01 level. On the other hand, both coefficients of correlation, contingency and Cramer ($C = 0.264$; Cramer $V = 0.273$), confirm the connection between the monitored variables. Overall, with 99% confidence we can conclude that there is a statistically significant difference in tolerance in children in accordance with the parental style that parents use, in parent-child relationship.

Educational status of parents and social behavior data

Concerning the relationship between the social behavior of children and educational status of the parents, we have tried to answer the following question: What is the relationship between the social behavior of children and educational status of their parents - general overview?

In this sense, the greatest percentage (77.27%) in the positive category of cooperativeness is found in children whose parents have completed secondary education, while 14.28% of their total number are not cooperative. The cooperation of the children in this group is greater than in the children whose parents have high education level (they are cooperative in 43.48% cases). The results also showed that 56.52% children whose parents have a high education level were not cooperative.

Children from parents with diversified educational status are in a better position in a cooperative behavior than children of parents with primary educational status. The difference among them is 39.03% compared to 25.00% in favor of the first one. Situation according to the different level of education of parents is statistically confirmed by all statistical calculations. Namely, Chi-square indicates statistical significance level of 0.01, while 99% assures the truth and the significance of differences.

Regarding the initiative behavior of children, we also found large deviations of the obtained frequency values, distributed across all levels of education, as opposed to the minimum expected theoretical frequency ($f_t = 12.85$). Namely, a great advantage in terms of initiatives was found in children whose parents completed secondary education, of which 92.04% show initiative in their behavior, and only 7.96% do not. Secondly, in view of the positive category of the observed form of social behavior, there are 52.17% of children from families with high educational status, 28.05% of children whose parents have mutually different educational status, and finally, again, children from families with primary level of educational status.

The differences were statistically confirmed ($p = 0.000$) with the value of Chi-square ($\chi^2 = 91.379$) that was quite higher on the three degrees of freedom than the limit value level of 0.01. The calculated correlation coefficients indicate a high correlation between the variables. In this case, 99% confidence confirms the statistical significance of the differences in the initiative of children according to the educational level of their parents.

The same situation, with regard to distribution of results, was observed in both groups (tolerance and intolerance) in all levels of parents' education, and tolerance as a form of social behavior was also found. The children whose parents have secondary level of education are better at tolerant behavior, i.e. they show tolerance in 80.69% cases, while in only 19.31% of the cases they do not show it. Children from families with high educational level of education are equal in the percentage across both categories of tolerance (tolerant 50% and intolerant 50%). Children of parents with different educational levels show tolerance in 36.58% of cases, while again we find the lowest level of tolerance in children of parents with primary educational level.

All statistical calculations show significant value of the differences in the observed variables. Chi-square ($\chi^2 = 42.830$) shows the significance level 0.01 with degree of freedom 3, while the calculated correlation coefficients ($C = 0.386$ and $Kramer V = 0.419$) statistically confirmed the connection between the monitored variables. And in this case with 99% confidence we can confirm the relationship between the level of education and the observed form of social behavior – tolerance.

Level of education, educational style of parents and social behavior of children

In this research it was important to determine the interrelatedness of impacts of educational achievement and parenting style of parents on the social behavior of children. Accordingly, the following statistical evaluations were performed: calculating multiple correlation (multiple R) in order to see the connection between the two predictors – the level of education of parents and their parenting style with dependent variable (social behavior in children); and Beta coefficients that we used to determine the relative importance of the independent variable that it influences, without the impact of other factors. Besides these, there have been calculations using Kendal Tau correlation coefficient that was suitable for this

purpose. The separate analyses were made in relation to all forms of social behavior in children. Seen in any form of social behavior, the relationship between the independent variables in the impact that they have on social behavior of children is the following:

Investigations of the impact on *cooperative behavior* as a form of social behavior in children showed that there is little connection in the common impact in both predictors - parental style and parents' educational status. Beta coefficients indicate a more negative relationship between the level of education of parents and the child's cooperation (level of education/Beta = - 0.168314) than in the connection of the parenting style with this form of social behavior (style/Beta = - 0.073437).

The results of observing *initiative* as a form of social behavior revealed that between this form of social behavior and the parenting style (Tau = 0.061) there is no statistically significant association ($p = 0.302$) in favor of a level of education (Tau = 0.250), which is connected with this social form at 0.05 level. However, R-level ($R = 0.300$) shows a high joint connection of the two predictors - mutual impact of the educational style and the level of education of parents, on the one hand, with this social form on the other hand. But Beta coefficients give a big advantage again to the impact of educational level of parents with very significant difference from the impact that the parenting style has (educational level/Beta = 0.2767; style/Beta = 0.0907).

In terms of *tolerance*, again we find a greater connection between the level of education with this form of social behavior (tau = 0.180), where significant value is 0.002 ($p=0.002$), unlike the parenting style which with this form of social behavior is linked to a lesser extent; i.e. tau = 0.129, whose value is significant at $p = 0.028$. But in both cases the significance level is 0.05. Beta values also show (insignificant) preference of the connection between educational level of parents with children's tolerance (education/beta = 0.1422; style/beta = 0.1281), while the calculated $R = 0.201$ indicates the existence of some connection of two independent variables with the dependent variable, i.e. tolerance.

Discussion

The largest cooperativeness is shown by children whose parents practice the democratic parenting style. This is quite understandable since democratic actions create a sense of self-esteem, self-respect and respect in children. These children show their cooperation by actively engaging in activities and in communicating with their peers. A lowest cooperativeness was shown by those children whose parents practice the autocratic parenting style. Probably it is relation to the strict and repressive behavior of their parents that causes distrust, fear and need of authority. These children are inclined to prove themselves aggressively, especially if the achieved success is valued by some person of authority. This is certainly reflected in reducing the level of active cooperative communication with peers in the group. Some children from the autocratic parenting style that show cooperation show a tendency toward passive cooperation, unlike the democratic ones.

Unlike other studies performed on schoolchildren which have shown that there is a greater closeness in behavior among children from autocratic and anarchic parenting style, in our case with children's cooperation, the analysis does not confirm the same result. The results of the children from anarchic parenting style, in terms of cooperation, showed closer approximation to the behavior of the children from the democratic (as a positive) parenting style. We can assume that anarchic behavior in children of the observed age still has little effect on cooperability. According to the nature of the anarchic parenting style, it is characteristic that a great number of children from this parenting style, still at this age have satisfactory collaborative behavior in the group, which can be justified by the absence of repressive parenting methods. In accordance with the expected consequences of an anarchic parenting style, it is very likely that this style creates low self-esteem in the later period of the

child's development, so it can be expected that in the future there will be less cooperativity of these children.

The initiative as a reflection of independence and of the need for friendship is an effect of respecting the child's personality, and their personal integrity and needs. It is therefore understandable that the results obtained in our research show the greatest potential in the manifestation of childhood initiative in children whose parents practice a democratic parental style. In contrast to them, the children of the autocratic family type show the lowest results in terms of the initiative, according to our expectations. These children often show their initiative during the activities organized by an adult person in the group, which indicates the need for support in taking actions. Of course, we can assume that this is due to the fear of error which arises as a consequence of the strict and repressive attitude of the parents of an authoritarian style. Unlike the cooperativity in which children from families with anarchic parenting style show much better and different results than children from autocratic families, in relation to the initiative this relationship is reversed: children from anarchic parenting style show procedures that are similar to the actions of children in autocratic family.

The democratic parenting style also dominated the child's tolerance. It is characteristic that there is a smaller difference in tolerance between the children from democratic and anarchic families.

The influence of the parenting style in relation to the educational status of the parents in several forms of social behavior proved inadequate in relation to the expected effects. This proved to be quite different according to different degrees of education. The highest consistency is found in children from families with elementary education level. Here we have a dilemma in interpreting the reason of this situation. Our assumptions go in three directions:

1. Probably these parents do not have any particular aspirations and expectations of their children.
2. It is probable that these parents do not have high professional and personal goals set in for themselves, which supports the leisure time which they spend with their children.
3. These families are likely to have a lower sociocultural status, which does not allow the entry of cultural influences that would change the influence of the educational style in children.

In this case, we conclude that the social learning of children from these families is maximally susceptible to and is dependent solely on the interaction relations between the parent and the child within the family.

Regarding the medium level of parental education, there is an interesting result. Namely, in children whose parents have a medium level of education, the influence of the educational status of the parents on their social behavior has in many cases been more pronounced in relation to the parenting style. From the analyses we find out that those children, with greater percentage representation, most often find themselves in the positive category of the observed forms of social behavior, regardless of the parenting style of their parents. The reason for this was sought in:

1. The leisure time these parents spend with their child in the absence of professional and career ambitions, and
2. Adopted cultural values and their wealth in the family environment, considering that these families have a good sociocultural status.

Probably, unlike primary education, this medium degree of education has the basis to allow entry of external influences within the family, so we can conclude that autocratic and anarchic influences in family relationships are lower in comparison to other dominant and positive variables.

Undoubtedly, the smallest differences in the percentage representation between the positive and the negative categories of all forms of social behavior are encountered in children whose parents have a higher educational level and apply different educational styles. It is interesting to note that these children, originating from democratic and highly educated families, unlike children from families with secondary level of education, are very often encountered in the negative categories of some forms of social behavior. Probably in this case the insufficient leisure time of the parents that they spend with their children affects social behavior of children. On the other hand, it is quite likely that it devalues the effect of the democratic educational style, with the tendency to turn into anarchic.

In the case of children from families with higher educational level, it can be concluded that in parallel with the interaction of the parent-child relationship, their social behavior is influenced by other factors related to the sociocultural dynamics within the family and within the family interaction with the environment.

Conclusions

We can conclude that social learning of children in the families is highly vulnerable and dependent on the interaction relationship between the parent and the child within the family. With regard to parenting styles it can be concluded that democratic parenting style has the most favorable influence on the social behavior of children. Autocratic parenting style supports negative forms of social behavior in children. With regard to the parents' educational level, the largest positive impact on the child's social behavior was found in the families where parents have secondary educational level of. Maybe that was due to a lot of free time which these parents spend with their children. Regarding the second direction, we can conclude:

1. Two independent variables are slightly related in terms of common influence on social behavior of children;
2. In respect of the said relative importance of the two independent variables in the manifestation of social behavior of children, the level of education of parents has a greater influence than the parenting style.

The research showed that a medium level of education (ISCED levels 3, 4 and 5) has a more positive influence on some forms of social behavior which are present in families with democratic parental style than a higher level of education. The information gathered from the research can be used for restructuring the institutional education, and this will result in better parenting and better development of the children.

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Nomophobia as a Disturbing Element in Education

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Abstract:

An origin and application of new technologies in the classroom affect all aspects of education, including its subject, object, processes and environment. Mainly due to new technologies, plenty of various non-traditional approaches towards education have been developed. On the other hand, the overuse of mobile Internet devices is frequently related to a kind of psychological deviations. Young people are the most frequent consumers and thus are exposed to their undesirable negative effects. Teenagers and young adults spend a lot of their time learning and training. This does not have to be necessarily deliberate and controlled by means of some educational institutions. However, a rampant use leading to an overuse of mobile devices negatively affects learning processes and its results. The aim of the study is to present a relationship between a psychological disorder known as nomophobia and educational environment. Firstly, we describe its origin and development of first approaches towards the classification together with works of the most significant experts in the field. We mention the origin, the most significant results of national and international research and future challenges. Consequently, we pay attention to specific features and forms of the use of ICT in the teaching process. We discuss nomophobia in education together with various approaches. As a conclusion, we propose some basic restrictions and suggestions of a proper use of wireless mobile devices designed not only for educational practice. A comparative analysis of various approaches is based on their methodologies, results and examples of good practice. We mention methods and procedures applied in different geographical and scientific areas as they provide extensive but still not complete views of the issue. We provide a description of a relation between nomophobia and elements of education. Efficiency of the use of mobile technologies in education depends on a subject, its content, aims, process and the subject and object of education. Nomophobia, as one of the results of too frequent use of mobile Internet devices, directly and indirectly hinders education. Effective modifications in education must take place with an application of new technologies in order to provide suitable forms, processes and environment for learners. That does not mean an exclusive usage of mobile Internet devices in classes, as it would steer various forms of not only psychological disorders.

Keywords: *mobile phone, education, nomophobia, disorder, smartphone*

Introduction

One of the basic functions of a modern mobile Internet device is communication. The results of an analysis of individuals' communication (King, Nardi, & Valença, 2010) using these modern devices revealed certain acquired habits, including "good and bad" feelings, symptoms and emotions. On the good side, there are convenience, comfort and availability, while on the other hand, the bad ones include dependency, fear and anxiety in young people when they are unable to use devices.

It is not just communication, but a vast amount of provided and constantly developing functions, features and functionalities. This results in a possibility to perform multiple and unlimited tasks on one device. And thanks to their variety of needs fulfilment, mobile phones have become an essential part of young people's lives in particular.

The Pew Internet survey on cell phone activities found that 91% of American adults own a cell phone (Smith, 2015). The Pew project study found that 95% of teens are online, a percentage that has been consistent since 2006 (Cortesi, Duggan, Gasser, Lenhard, & Madden, 2013). However, there is a dramatic shift in the nature they use Internet. One may even speak of always-on connections lasting 24 hours a day.

According to research performed in high schools in Taiwan by Ching Yang and Tung (2004), up to 13% of students were identified as addicted. Moreover, students themselves identified the following areas which were negatively affected by the Internet use: school learning, daily routines, health, parental relations, teacher relations. As to a positive impact, they mentioned their peer relations as those which were positively influenced. The study demonstrated the direct correlation between the number of hours online (21.2 a week) and an addiction. "Furthermore, students with personalities characterized by dependence, shyness, depression and low self-esteem are more likely to become addicted than students without these characteristics." (Ching Yang & Tung, 2004).

According to the results of the research performed by members of Research Institute for Child Psychology and Pathopsychology (IMEC, 2012), 97.4% of children in Slovakia aged 11-18 use the Internet daily, with an average of 110 minutes on school days and 2.5 hours at weekends spent on the Internet. An increasing period of time spent by children and adults online raises the question whether they/we have the Internet use "under control" or whether it has got out of their/our hands.

The research (Blinka, Green, Helsper, Kalmus, Ólafsson, & Smahel 2012) provided several conclusions. The favourite activities of teenagers (average age 14.25 years) are chatting (44%), social network activities (43%), watching videos (24%), playing games (20%), searching for and downloading files, music and movies (19%) or surfing the net (13%). They are just children and teenagers who are mostly endangered by addictions through such activities. In the research carried out in 2012, the scientists found out that 86.5% of children own their own Facebook account and a certain part of free time is dedicated to it. Facebook with its peculiarities is particularly attractive for children and teenagers as it provides peer reactions on their own image and identity, a feeling of inclusion and being informed about what their friends do.

It is also not surprising that the usage of mobile devices with Internet connection does contain only positive features, and to measure an impact of new technologies on individuals is definitely a complex task. From psychological standpoint (Nicolaci-da-Costa, 2006), their effects are related to changes in behavior and habits and should be further studied to better understand interactive effects with regard to learning, social cognition, personality and relationships.

One of the so-called non-substance addictions, which are closely related to online life mediated via wearable mobile devices, is nomophobia - an irrational fear of being out of

mobile phone contact (technopedia.com, 2016) that. It has taken the central place in our analysis.

“Nomophobia, coined from a term “no-mobile-phone-phobia” during a research study to find out the psychological ramifications and stress level of mobile phone usage on behavior, describes the level of fear generated when a user is unable to communicate through their cell phone”.

There are already investigated problems including compulsive checking habits, compulsive use, distress or even various forms of addiction.

Nomophobia (2014) is a term describing a growing fear in today’s world — the fear of being without a mobile device, or beyond mobile phone contact. It has been on the rise among today’s high school and college students.

Education and nomophobia

On the one hand, in education one deals with a specific context that manifests its significance particularly from the perspective of a formation of the individual. On the other hand, one speaks of the sphere which strives to use information-communication technologies effectively by means of its methods, aims and instruments.

It is these particularities of the process of education (in any direction and in any step of a directed process) in relation to students who nowadays utilize the latest technological innovations of mobile communication excessively.

As mobile phones have penetrated almost every human activity, educational processes are not an exception. This relationship, on the one hand, is beneficiary both for students and teachers. However, on the other hand, mobile phones represent a revolution, a new dimension in every aspect and element of education. So the positive aspects go hand-in-hand with the opposite ones. Traditional learning is modified and new forms of education have already started, with different results. Let us take the so-called blended learning and its variations. They are quite frequent these days. Garrison and Kanuka (2004) explain that blending simply means integrating classroom teaching with online experiences. There are numerous other forms of such teaching, from containing just a few online activities up to those fully operating in a virtual reality, which brings plenty of issues and problems to deal with.

Negative consequences in education

Obviously, the symptoms of nomophobia, its development and causes represent negative consequences in educational process. As pedagogy, educational environment and procedures transform, so do our effort to describe, analyze and grasp them. We must take into consideration new reality and, thus, use new tools or traditional tools in a new way in order to understand this relationship, to prevent it and to provide efficient education in new conditions and with new aims. In our theoretical study we focus on features of the relations and manifestations of nomophobia in education. The issue and characteristics of nomophobia prevail in the first part, followed by its particularities in the context of other addictions and reasons of its origin in schools. Finally, we provide a present-day situation and possible future shapes of the relation.

Origin of phenomenon and first approaches of description

One of traditional and common definitions of smartphone states that it is a type of a mobile phone that has an integrated operational system and processor of such quality as present-day computers, they have a lot of functions, from a music player and a camera, up to

a modern (Ševčík, 2009). It is namely connectivity and a variety of functions thanks to which smartphones access known limits of communication, information and entertainment. They meet human psychological, cultural, social and religious needs on a large scale, and generate feelings of safety and awareness. And development does not stop.

However, there are not only bright sides of smartphone pervasion which grab scientific and general public. Various addictions, deviations and forms of illnesses emerge, that go hand in hand with the use of the smartphone. And nomophobia is one of them.

Negative consequences of addictive behaviour online are frequently classified by psychologists according to four basic spheres. The four areas are career (study and occupation), mental health and social relations, physical health and finance. (Vacek, Vondráčková, 2009). All the spheres are fundamentally mirrored in quality of education.

Also, there are many answers to the question why young people use Internet so frequently and their concrete focus depends on the level of scientific development in a given field. For example, Benkovič (2007) assumes that a frequent use of the Internet reduces tension, invokes a feeling of excitement and it emotionally supports social introverts, unattractive and insecure individuals. It also assists in killing boredom, loneliness and a lack of stimuli. The anonymity of the virtual world at the same time conveys an illusion of a new, better and publicly desirable identity.

The topic of the modern non-substance addictions is still vague, more visible at the level of popular science-related forums or blogs, partially caused by weak awareness of the Internet users and related prevention. Yet, the world of ICT is so complicated that so far there has not been an efficient and complex approach that would cover multiple spheres of negative effects of technologies.

When analyzing national and international sources dealing with the issue, one may observe a diversity in solutions, which causes different optics through which professionals investigate the topic or its parts. As a general rule, a name that was intended as a joke or remark for an online community of people in the past signalled an origin of a great sensation which has not been described yet and which will probably not be described soon. And this area with a lot of spots of low visibility means it may not be easily corrected and cured.

One of the first descriptions of the quantity of the Internet addictive behaviour was provided by Glodberg (1995). He imposed an alternative to the relation between the Internet and spiritual world, and, thus a new mental disorder. A more detailed characteristic of the Internet addiction was presented by the American psychologist K. S. Young (1998), who started an era of real detailed scientific interest in the matter, although mostly in the sphere of psychological sciences.

Nomophobia was defined by King, Nardi and Valencia (2010) as an illness of the 21st century caused by new technologies, in one of the first studies in which authors paid attention exclusively to nomophobia. As far as the definition is concerned, its authors also include computers in the same group as mobile phones. Accordingly, their later definition follows goes along the same line, since they properly assume that the computer is substituted by such an instrument, which contains all functions performed by the smartphone. In their study, Baczynsky, Carvalho, King, Nardi, Silva and Valencia (2013) speak of "non-availability of a mobile phone, PC or any another virtual communication device." Moreover, they classify a relation of nomophobia with agoraphobia.

The objective of the research was to study nomophobia (Nomophobia fear mobile phone contact, 2011) as manifest behavior to investigate the presence of other major mental disorders, such as anxiety, for example.

Correia and Yildirim (2015) mention four dimensions of nomophobia in their study: (1) not being able to communicate, (2) losing connectedness, (3) not being able to access

information and (4) giving up convenience. According to the results, all the dimensions are mirrored in education. Their effects are detrimental to objectives set by teachers.

Slovak research

Regarding results of research by Slovak specialists, Hupková (2015) mentions the research that focused on the connection of adolescents and mobile phones. According to evaluation criteria, adolescents reported all symptoms of a relation of their own mobile phones as to a living person. In their description they used phrases used when describing a loved person, they were unable to spend a longer period without it, also symptoms of dependency on calls, messages, sharing of information, photographs and videos. Fast lifestyle, workaholism or fascination by ICT, pleasant feelings during its use, even with school environment represent an open highway to an addiction.

Predominantly psychological community focuses mostly on three factors that trigger Internet addiction disorder in their classification of characteristics of virtuality: availability of online life 24/7, economic availability and wireless connection and especially anonymity, since an aspect of disinhibition is involved as well – to live without barriers.

According to the result of the research by Holdoš (2015), young people in Slovakia (the average age 20.19) use the Internet daily for 5.17 hours on workdays and 4.77 hours at weekend. Another result was that 13.6% of respondents showed characteristics of a medium addiction and excessive Internet use. The disorder closely related to sex online, social networks and chat. As the results of international research indicated, men were more endangered by addiction.

The generation of online migrants slowly but surely outnumbers the generation of exclusive real world inhabitants. ICT is a solid part of their lives from the moment they are born. Prevention must take place at several levels at the same time, i.e., at the individual, family, education, company, media and social levels. It is only an interdisciplinary approach towards the issue that can be efficient, as this type of disorder affects a wider spectrum of society.

Education and new technologies

Information communication technologies combine commonly independent educational tools and aids, i.e., texts, telephones, photographs, databases, games, music, blackboard. It means that not only an organization of several aids and tools takes place by their means, but even several forms and environments of education. In practice, if ICT is to bring the desired results, a radical change must be imposed on all levels of education.

According to Survey of Schools: ICT in Education (2013), teachers in EU assume that the most significant problem in ICT use in education is an insufficient amount of technological equipment. Furthermore, they also state their insufficient use during classes, a lack of preparation for the use, as well as a lack of strategy in application. Moreover, teachers realize a necessity of such a reform that would enable a full range of ICT application in education.

The educators expect that these technologies will relieve pressure of their workload and make education more effective and less complicated. The learners expect that they will learn sufficiently by means of entertaining and spontaneous ways. So, education will become easier and more effective. Society anticipates such results which will correspond to and advance the job market, and learners will gain quality and positive knowledge, values and skills.

Disputes seem to exist not only about whether better ICT mean also better education, but also if they are needed in education and if so, to which level. The idea of ICT competence as another basic competence besides reading, writing and counting leads the way. S. Livingstone (2012), following the research in the USA and EU, assumes that despite the fact

that everybody realizes an importance of such competences, schools do not primarily focus on how they teach pupils to use the technologies properly.

An insufficient and improper use of ICT in education contribute not only to development of wrong educational habits, but also to defective habits of a use of ICT that often slide into disorders.

Another level in the stage of development of the relation between ICT and education is a so-called mobile and ubiquitous learning, and it is not surprising that it attracts attention not only of academic communities and companies, but also general public. Mobile, modern, multimedia education – this is mLearning. It emphasizes its transformational potential, especially blended learning (a combination of online and face-to-face education). Gröbhiel, Mateescu and Pimmer (2016) synthesized and presented the usage and outcomes of mobile and ubiquitous learning into four categories: instructionism, situated action and contextual scaffolding, constructionist and collaborative learning, and hybrids of situated, constructionist and collaborative designs.

In the first approach, the benefits of mobile devices are in facilitation and activation but with limited evidence of knowledge gains. In the second one, facilitating problem and inquiry-based learning, instructions help learners, but not dramatically when compared to paper-based instructions. In the third one, learning by making something that makes sense in the real life, ICT is used to capture fleeting ideas but with limited evidence for reflective learning. In the hybrid category, new learning methods assist learners to reconcile learning from inside and outside classrooms, provide a more immediate response, engagement and personalization.

It is obvious that efficiency of the use of mobile technologies will depend on a subject, its content, aims, and the subject and object of education. First of all, we speak of a relation of an approach to education and efficiency of mobile technologies in education. In the traditional, instructional approach (instruction-performance-control), one may mention mobile testing or mobile practice. In case of demonstrative or active learning through multimedia and didactic applications, in active learning with comprehension (constructivism), tasks that students can solve independently are applied together with group tasks. In learning by doing, (constructionism) there are various means and tools for production.

Nomophobia and education

In a technological context we may observe a huge gap between the so-called iGeneration (born in 1990s), NetGeneration (1980s), GenXers (1965-1979) and Baby Boomers (1946-1964). Essentially, children are informed better about the latest technological innovations than their parents and educators. Digital technologies have radically shaped not only the ways of spending free time, but even ways of receiving, processing and use of information.

Entertainment is a primary reason of the use of the Internet, nowadays especially through the WMDs across the whole spectrum of learners. We can observe certain discrepancies in addiction in terms of gender, age, country or a level of education. What concerns more are the common features.

According to Capetillo-Ventura and Juárez-Treviño (2015), university students used the Internet 7 days a week, mostly 10 times a day, spending almost an hour on each connection. They all agree they frequently surf the web longer than intended, which leads to a lack of self control in the use.

Carrier, Chavez, Cheever and Rosen (2014) investigated anxiety of students when their WMDs were unexpectedly not available. It is appealing that students with an average use demonstrated a constant growth of a state of anxiety only when the device was taken away, not when they were forced to turn it off and place it near them. However, in case of individuals

who demonstrated the symptoms of addiction to mobile devices, anxiety grew even when they knew their WMD will be returned to them.

From the results of almost all research covering the relationship of nomophobia and education one may assume that:

- Most of learners tend to be anxious when they lose their mobile phone, run out of battery or credit or have no network coverage, which negatively affects a course of education;
- Forms of anxiety interfere significantly with daily routines, occupational performance, or social life, making it difficult to complete school, go to a job interview, get a job and have friendships
- Social anxiety prevents people from being able to do the things they want to do
- Nomophobic behaviour is reflected in a disability to communicate; pupils are unable to access and evaluate information, which leads them to the state of panic, worry or anxiety.

Nomophobia is detrimental to educational activities in several ways. General academic performance of students is strongly affected by their activities, not only during the teaching process, but also during a preparatory stage. Their results in academic sphere are poorer due to the fact that they dedicate more time to smartphone and non-learning activities during classes or in their free time.

Another element widening the detrimental effects on students' results is their obsession with smartphones, which shortens their attention span.

Anxiety caused by running out of a battery or a poor signal is hostile towards the effort of a teacher to create classroom atmosphere.

A use of smartphone is not correctly controlled, which means students tend to use it all the time, very frequently against classroom rules or at the expense of social behaviour or development of competence.

Discussion and conclusion

With changes in technologies, new challenges have been posed on a daily basis and new kinds of phobias have emerged - the so-called technophobias. There is no doubt about the social benefits of technologies, namely calling for help in case of an emergency, social contacts with relatives and colleagues, cancelling of a meeting due to an unexpected circumstance, and so on. However, it is necessary to mention facts that go beyond this reality and it all starts with a slight overuse and it often means a way to an addiction.

Nomophobia represents anxiety resulting from a loss of the device, running out of the battery power, a loss of signal and inability to get connected with the world around. There are reasons why this disorder prevails in the sphere of young people. These individuals recorded the highest level of affection towards wireless mobile devices.

New information communication technologies have become a solid part of educational process and an extent of their application depends on a selected educational approach. Their benefits in learning and teaching change and cannot be fully measured in a relation with efficiency of education.

On the other hand, educators are obliged to be familiar with not only the benefits, but also the disadvantages, including nomophobia as a disturbing element in education.

Mobile Internet devices are a highly-overlooked jeopardy in the educational sphere, as they may cause addiction and problems with attention span, empathy, self-esteem, interrupted learning, anxiety, depression and feelings of stress or loneliness.

The educational environment these days means not only equipment provided by schools, but also devices owned by pupils. Teachers these days should know about nomophobia and its symptoms and levels to prevent it. Prevention should include a controlled

mobile Internet device use, effective mobile learning and teaching activities inside and outside schools. They can control and consider a change in emotions, mood or behaviour caused by the devices.

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Performance of Science Teaching Students on Using Different Representations in Physics

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Abstract

The importance of representations and students' representational skills has attracted researchers in physics teaching for about a decade. The number of studies focusing on students' performance with respect to the types of questions is relatively low. The aim of this study is to examine the science teacher education students' performance on various representations, and to investigate the relation between their performance in different types of representations and their success in science classes. Around 84 second year science teacher education students from a northwestern university in Turkey participated in the study. To collect data, a quiz was prepared by the researchers by selecting questions from a doctoral thesis on understanding how students use representations in physics problem-solving (Kohl, 2007). The quiz contained 2 groups of questions relating to the Bohr Atomic Model and spectroscopy model with 4 different representations including graphical, mathematical, verbal and pictorial formats. It was administered to the science teacher education students in the last week of the introduction to Modern Physics Course in the spring semester of the academic year 2015/2016. In order to analyze the data, researchers scored the student teachers' answers as right or wrong, and calculated the total frequencies and percentages with respect to their success on different representations. These frequencies were also related to their performance in Science classes. The findings reveal how science teacher education students perform when faced with different representations in physics, and how their performance is related to their success in science classes. The findings are expected to point to the possible difficulties for science teacher education students with respect to the use of multiple representations in physics classes.

Keywords: *Multiple representations; Physics Education; science teacher education students; Science Education; Modern Physics*

Introduction

Use of Representations in Physics Education

The importance of the use of multiple representations and students' representational skills has attracted researchers in physics teaching (Nguyen & Rebello, 2011; Rosengrat, Etkina, & van Heuvelen, 2007). Van Heuvelen (1991) points that the use of multiple representations is a teaching strategy to develop students' problem-solving abilities, and defines multiple representations as the use of verbal, pictorial, physical, vectorial, graphical, and mathematical representations in problem solving. Rosengrat et al. (2007) also define a representation as "...something that symbolizes or stands for objects and or processes" (p. 149), and they further add that its examples in physics cover *words, pictures, diagrams, graphs, computer simulations, and mathematical equations* etc.

Research indicates the benefits of the use of multiple representations in physics teaching (De Leone & Gire, 2005; Kohl & Finkelstein, 2004, 2005; Meltzer, 2005) and that the use of multiple representations has an influence on student performance (Kohl & Finkelstein, 2004, 2005, 2006; Meltzer, 2005; Rosengrat et al., 2007). For example, Meltzer (2005) indicated that when problems were posed in different representations, students' performance was different. Moreover, Savinaien, Nieminen, Viiri, Korkea-Aho, and Talika (2007) indicated that different types of questions in physics exams (i.e. verbal, pictorial, graphical etc.) had an influence on student performance. In another study, Kohl and Finkelstein (2004) found that the students performed better in a physics problem with pictorial format when compared to verbal, graphical or mathematical format. At this point, Nguyen and Rebello (2011) underline that the use of multiple representations helps students enhance problem solving abilities.

In the present study, from the point that the use of multiple representations is useful in improving students' problem-solving performance, in order to understand how students' performance differs when they are asked physics problems with different representations and how their performance on multiple representations is related to their academic success, we investigated students' answers to 2 different physics problems with 4 different representations for each.

Purpose and research questions

The aim of this study was to examine the science teaching students' performance on multiple representations, and to investigate the relation between their performance in different types of representations and their success in science classes.

The research questions were:

- 1) Do participants perform better in specific types of representations?
- 2) Is there any relation between participants' performance on questions posed in different representations and their academic science success?

Method

Participants

The participants in the study were 84 sophomore science teaching students from a northwestern university in Turkey. The participants' age range was around 18-20 years, and their GPAs ranged between 1.90-3.74 over 4.

Data collection

To collect data, a question form was prepared by the researchers through selecting questions from a doctoral thesis on understanding how students use representations in

physics problem solving (Kohl, 2007). The quiz contained 2 groups of questions relating to Bohr Atomic Model and spectroscopy model with 4 different representations including graphical, mathematical, verbal, and pictorial formats. The difficulty level for the Bohr Atomic Model test was calculated as .43, and the difficulty level for the spectroscopy test was .30. In the problem related to the Bohr Atomic Model, the students were asked to answer questions such as finding the orbit radius in the Bohr Atomic Model and determining how the orbit radius changes depending on the energy levels. In the problem relating to spectroscopy, they were asked to find what happens to Balmer series lines and to energy levels and what happens to the energy of emitted photon with the orbitals when ionization energy changes. With respect to the different representations, in the graphical format, the questions included any types of graphs that stated any kinds of relations between physical quantities; in the mathematical format, the questions were represented with mathematical formulas; in the verbal format, the questions were in a descriptive form without any mathematical symbols; and finally in the pictorial format, the questions were presented in pictures that figured the physical phenomena.

The questions were first individually translated into Turkish by the authors with the permission of the owner/researcher, and then the final form of translation was obtained by comparing the two translated versions of the questions form. The final form was also examined by two educators who were experts in the field of physics and who had a good mastery of both Turkish and English. After necessary arrangements were made in accordance with the received feedback of the experts, the form was administered to the science teaching students as a quiz exam paper in the last week of the Introduction to Modern Physics class in the spring semester of 2015/2016 academic year.

Data analysis

To analyze the data, both descriptive and statistical methods were employed. In order to analyze the data to answer the first research question on students' performance in different types of representations, the researchers scored the students' answers to the questions in different formats - as right (1) or wrong (0), and then calculated the total frequencies and percentages with respect to their success on different representations. In order to compare the success level of students on different representations, Wilcoxon Signed Ranks test was conducted.

In order to answer the second research question on the relation between participants' performance on questions posed in different representations and their academic science success, total frequencies were related to their performance on science classes through Spearman's rank order correlation test.

Results

When students' answers to the Bohr Atomic Model representation questions were examined, the below presented frequencies and percentages were obtained. Accordingly, the number of correct and wrong answers to the Bohr Atomic Model representation questions and their percentages are given in Table 1.

Table1. Number of correct and wrong answers given to Bohr Model representation questions

	Number of Correct Answers	Number of Wrong Answers	Percentage of Achievement (Success)%
Verbal-1	34	50	40.5
Graphical-1	40	44	47.6
Mathematical-1	50	34	59.5
Pictorial-1	22	62	26.2

As seen in Table 1, the analysis of students' responses revealed that mathematical representation had the highest achievement percentage (59.5%). This percentage was followed by graphical (47.6%) and verbal (40.5%) representation types of questions. The lowest achievement was obtained for pictorial representation (26.2%).

When students' answers to the spectroscopy representation questions were examined, the below frequencies and percentages were obtained. Accordingly, the number of correct and wrong answers to spectroscopy representation questions and their percentages are given in Table 2.

Table 2. Number of correct and wrong answers given to spectroscopy representation questions

	Number of Correct Answers	Number of Wrong Answers	Percentage of Achievement (Success)%
Verbal-2	28	56	33.3
Graphical-2	30	54	35.7
Mathematical-2	36	48	42.9
Pictorial-2	8	76	9.5

As seen in Table 2, the analysis of students' responses revealed that mathematical representation had the highest achievement percentage (42.9%), and it was followed by graphical (35.7%) and verbal (33.3%) representation types of questions. The lowest achievement was obtained for pictorial representation (9.5%).

To compare the success level of students on different representations, Wilcoxon Signed Ranks test was conducted. In Table 3 and Table 4, z values and significance levels for each representation variables of the Bohr Atomic Model and spectroscopy questions are given respectively.

Table 3. Wilcoxon Signed Ranks Test results for the Bohr Atomic Model question

Test Statistics ^c						
	VERBAL - PICTORIAL	MATH - PICTORIAL	GRAPH - PICTORIAL	MATH - VERBAL	GRAPH - VERBAL	GRAPH - MATH
Z	-1.897 ^a	-4.427 ^a	-2.654 ^a	-2.828 ^a	-.949 ^a	-1.543 ^b
Asymp. Sig. (2-tailed)	.058	.000	.008	.005	.343	.123
a. Based on negative ranks.						
b. Based on positive ranks.						
c. Wilcoxon Signed Ranks Test						

According to Table 3, there was a significant difference in the success scores for mathematical and pictorial ($z=4.43$, $p<.0005$), graphical and pictorial ($z=2.65$, $p<.05$), and mathematical and verbal representations ($z=2.83$, $p<.05$) of the Bohr Atomic Model.

Table 4. Wilcoxon Signed Ranks Test results for spectroscopy question

Test Statistics ^c						
	PICTORIAL - VERBAL	MATH - VERBAL	GRAPH - VERBAL	MATH - PICTORIAL	GRAPH - PICTORIAL	GRAPH - MATH
Z	-3.780 ^a	-1.298 ^b	-.316 ^b	-4.667 ^b	-3.773 ^b	-.926 ^a
Asymp. Sig. (2-tailed)	.000	.194	.752	.000	.000	.355
a. Based on positive ranks.						
b. Based on negative ranks.						
c. Wilcoxon Signed Ranks Test						

According to Table 4, there was a significant difference in the success scores for mathematical and pictorial ($z=4.667$, $p<.0005$), graphical and pictorial ($z=3.773$, $p<.05$), and verbal and pictorial representations ($z=3.780$, $p<.05$) of spectroscopy.

In order to answer the second research question on the relation between participants' performance on questions posed in different representations and their academic science success, Spearman's rank order correlation test was employed. The results are provided in Table 5 below.

Table 5. Spearman's rank order correlation results on the relation between test performance and academic science success

Correlations				
			Test score	Science score
Spearman's rho	testscore	Correlation Coefficient	1.000	.539**
		Sig. (2-tailed)	.	.000
		N	84	84
	sciencescore	Correlation Coefficient	.539**	1.000
		Sig. (2-tailed)	.000	.
		N	84	84

** . Correlation is significant at the 0.01 level (2-tailed).

As seen in Table 5, the relationship between representation test scores (as measured by the representation question form) and students' science scores (as calculated by the mean success scores of science classes) was investigated using Spearman Rank Order Correlation (rho). Accordingly, there was a strong, positive correlation between the two variables [$r=.54$, $n=84$, $p<.0005$], with high levels of test scores associated with high levels of science success (Cohen, 1988). Additionally, the coefficient of determination value (r^2) indicated 29% shared variance which means that test score helps to explain 29% of the variance in participants' science mean scores, which indicates large effect size.

Discussion and conclusion

In this study, it was aimed to examine the science teaching students' performance on multiple representations, and to investigate the relation between their performance in different types of representations and their success in science classes. Results revealed that prospective teachers had the highest achievement percentage in mathematical representations in both the Bohr Atomic Model and spectroscopy questions. In the literature, research also suggests that participants show different performance regarding the use of different representations. More specifically, in Kohl and Finkelstein's (2004) study, researchers suggested that students preferred pictorial representations rather than verbal, graphical, or mathematical representations. It should be noted that their preference did not mean that they were more successful in that representation. Researchers concluded that there was no direct relation between the format and difficulty of the problems. In another study, Ergin, Comert, and Sari (2012) concluded that students were more successful in solving problems in verbal, mathematical, pictorial, and graphical representations respectively. Their performance was high and close to each other in verbal and mathematical formats while they showed low achievement especially in graphical format.

The results of the present study indicated that the prospective teachers in this study had the highest achievement in mathematical representation questions, which may suggest that they were used to solving problems in this specific type of representations, both in their physics and Mathematics classes. This finding indicate that it is important that instructors should embed multiple representations in their classes if they want to improve the problem solving skills of their students. The research also suggests that when students learn physics through the use of multiple representations, they can use these representations in problem solving (DeLeone & Gire, 2005).

The results also revealed that mathematical representation percentage was followed by graphical and verbal representations respectively in both questions. The prospective teachers had the lowest achievement in pictorial representations in both questions. These findings are again in line with the literature (Kohl & Finkelstein, 2004, 2005; Meltzer, 2005; Savinaien et al., 2007). More specifically, research suggests that students perform differently when they are given different representational formats (mathematical, graphical, verbal, and pictorial), even if the problem statements are almost isomorphic. More specifically, in Kohl and Finkelstein's study (2005), where students' performance on problems with different representational formats was investigated, it was concluded that the difference between students' performance among different representations of almost isomorphic problems was significant. Meltzer (2005) also pointed out that students may find different representations quite different even that they are almost identical and representing the same concept.

Research also indicates that science teaching students have difficulty with specific formats of representations (Kohl, 2007). In the present study we also found out that prospective science teachers had many difficulties in solving pictorial representation problems. This might be an indication that students do not have enough chances to solve this kind of problems during their initial teacher education and/or their previous education. Moreover, students' general performance on other representations was low. Except from the mathematical representation question of the Bohr Atomic Model, students' performance on all four different representations for both Bohr and spectroscopy questions were under 50%. This may imply that prospective science teachers are having difficulties in solving physics problems in general. At this point, it should be noted that research suggests that students who learn physics through the use of multiple representations can connect different representations to problem solving (DeLeone & Gire, 2005; Rosengrant et al., 2007). Dufresne, Gerace, and Leonard (1997) and Rosengrat et al. (2009) suggest that it is an effective way to represent a problem with different formats in order to enhance problem solving. Kohl and Finkelstein (2006a) also suggest that when students experience multiple representations while learning physics, they are less affected by the format of the problems. Then, creating learning environments for future science teachers where they can experience solving problems with multiple representations may not only increase their problem solving abilities, but also may minimize their difficulties with and enhance their success levels in physics. Research suggests that using multiple representations during instruction might be an effective way to enhance students' understanding of science (Adadan, 2012; Kaya Sengoren, 2014). At this point it should be underlined that students' performance in physics does not only depend on the use of multiple representations, but it also depends on the subject taught and/or the previous learning experiences of students (Kohl & Finkelstein, 2006b).

To conclude, we hope that the findings of this study will point to the possible difficulties in science teaching students with respect to the use of multiple representations in physics classes. The findings are also expected to shed light on how science teaching students may perform when faced with different representations in physics, and how their performance is related to their success in science classes. For future studies, it is recommended to conduct interviews with prospective teachers in order to understand their difficulties in using multiple representations in more depth.

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Professional paper

Prospective Science Teachers' Knowledge of and Difficulties with Trigonometry and Angle Measurement

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Abstract

The purpose of this study was to analyze prospective science teachers' knowledge of trigonometry and angle measurement before and after instruction, and to identify their difficulties regarding trigonometry concept. The participants in the study were 46 second year prospective teachers in Science Education Department in a western university in Turkey. To collect data, a test was developed by the researchers using the literature. There were 4 open-ended and 3 multiple choice questions in the knowledge test. In order to analyze the prospective science teachers' knowledge of trigonometry and angle measurement, Wilcoxon Signed Rank Test for paired samples was used as the data did not show normal distribution. Additionally, in order to identify their difficulties, frequencies were calculated. The analysis revealed that there was no significant change in the scores on the knowledge test from pre-test to post-test at the .05 significance level ($z=1.29$, $p=0.2$). On the other hand, Wilcoxon test for each question revealed that in the seventh question where they were asked to measure an angle and make calculations requiring trigonometry knowledge, there was a significant improvement in the mean scores from pre-test to post-test. In the first question where they were asked to explain why $\tan 90$ degree was undefined, there was also an improvement in the mean scores although it was not significant. Additionally, frequency analysis indicated that prospective teachers had difficulties, especially with questions 2, 5 and 6, where they were asked to compare trigonometric functions or determine the signs of the functions in a given angle range, and solve a real-life problem requiring knowledge of trigonometric function. Overall, the findings indicated that although prospective teachers took classes covering trigonometry and angle measurement such as Mechanic Course, and moreover, they had special lessons during this study, they still had major difficulties solving trigonometry problems and measuring angles. It is recommended to examine why prospective teachers had such difficulties with trigonometry and angle measurement through qualitative approach.

Keywords: *prospective science teachers; trigonometry; angle measurement; Science Education; teacher difficulties*

Introduction

Trigonometry and angle measurement concepts

Trigonometry is among the important courses in high school mathematics curriculum (Weber, 2005) and is embedded in algebra, arithmetic, and geometry (Orhun, 2004). It is also a prerequisite for several other branches including physics (Weber, 2005). On the other hand, it is a challenging course for students (Gur, 2009). Research indicates that teaching practices in trigonometry courses do not help students develop an understanding of the subject (Weber, 2005); instead they mostly focus on procedural knowledge (Kendal & Stacey, 1997, cited in Weber, 2005). When students memorize the methods and do not have a conceptual understanding of the subject, their knowledge cannot be retained for a long time (Gur, 2009). At this point, what teachers conceptually know about the trigonometry comes to the fore. It is well known that teacher knowledge is one of the key factors in effective teaching and learning (Hill et al., 2008). Then, if we want quality teaching, the teachers have to have deep knowledge of the subject that they teach (Fernandez, 2005) in order to help students understand the subject effectively (Ball, Thames, & Phelps, 2008). They also must have knowledge of their students (Ball & McDiarmid, 1990). Any lack of teacher knowledge influences teaching, and thus student understanding. Research points that both teachers and students have difficulty with reasoning about trigonometry (Thompson, Carlson, & Silverman, 2007). Thus, what teachers know about trigonometric concepts should be investigated.

Angle measurement is another important topic in high school mathematics curriculum which is a prerequisite for physics classes (Moore, 2013), and it is inseparable from trigonometric functions. It is important that students conceptually understand angle concept and link it to angle measurement (Crompton, 2013). On the other hand, Crompton (2013) points out that research reveals that students have difficulties in understanding the concept, and that they also have misconceptions related to this concept. Research also highlights that when teachers and/or students have fragile understanding of angle measure, their understanding of trigonometric functions gets weaker. For example, Akkoc (2008) points out that deficient understanding of radian angle measure leads to difficulties of prospective teachers in trigonometry. Thus, it is a need to investigate teachers and students' understanding of angle measurement to better analyze their understanding of trigonometric functions.

From these points, we believed that it was important to examine what prospective teachers know about trigonometric concepts as well as angle measurement. As mentioned before, what teachers know has an influence on what students learn, so examining prospective teachers' understanding of these topics is expected to shed light on whether and how they can guide their students while teaching these subjects when they enter the profession.

Purpose and research questions

The purpose of this study was to analyze prospective science teachers' knowledge of trigonometry and angle measurement before and after instruction, and to identify their difficulties regarding trigonometry concept.

The research questions to answer were:

1. Is there a change in the scores on prospective teachers' knowledge test regarding trigonometry and angle measurement before and after instruction?
2. What are the difficulties prospective teachers experience regarding trigonometry and angle measurement concepts?

Method

Participants

The participant sample consisted of 46 second year prospective teachers in Science Education Department in a western university in Turkey. The participants' GPAs ranged from 1.90 to 3.74, and their age range was 18-20 years. These prospective teachers took General Physics I and II, General Physics Laboratory I and II, and General Mathematics I and II classes during their first year of initial teacher education, while they have already received instruction on these topics during their high school education. In General Mathematics classes, they received instruction on trigonometric functions, inverse trigonometric functions, and limit and integral of trigonometric functions. In physics classes also, they used their knowledge of trigonometry and angle measurement. For example, in General Physics I course, they used trigonometric functions in mechanic concepts including 2D motion, Newton law, oblique plane, force, conservation of energy, and oscillation movement. In General Physics II course, they use their knowledge in magnetic force under magnetism. Also, in General Physics Lab I course, they used their knowledge of angle measurement while studying Lami theory and simple pendulum. In other words, before their second year in initial teacher education, they have already been expected to develop their knowledge of trigonometry and angle measurement concepts.

Procedure

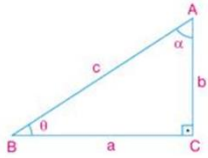
During the General Physics Laboratory III classes in the first term of their second year, prospective teachers received instruction on the basics of trigonometric functions as well as angle measurement from the second researcher who was the instructor of the course. The instruction was either in the form to remind them of these topics or to help them grasp the concepts in case they did not understand it well enough before. During the course, prospective teachers had an opportunity to listen and then practice the applications of trigonometric functions and angle measurement in physics. While doing that, they mostly worked on examples related to Snell law.

Data collection

To collect data, a knowledge test was developed by the researchers from the literature (Guntekin, 2010; Tas, 2013; Tekin, 2010). Accordingly, there were 4 open-ended and 3 multiple choice questions in the knowledge test. To test the reliability of the questions, expert opinion was taken from two educators. The test questions are provided below in Table 1.

Table 1. Pre/post test questions

1 st question (taken from Tas (2013))	Explain why $\tan 90^\circ$ is undefined.
2 nd question (modified from Tas (2013))	Explain the order of $\sin x$ and $\cos x$ when $0 < x < \pi/6$.
3 rd question (taken from Guntekin (2010))	Which is the right sign ordering for $\sin 300^\circ$, $\cos 400^\circ$, $\tan 140^\circ$, and $\cot 150^\circ$? a) -,+,+,- b) +,-,+,- c) -,+,+,+ d) -,+,+,+ e) -,+,-,-

4 th question (modified from Guntekin (2010))	<p>If a, b, c are the angles in the first quadrant of a coordinate system, and $\sin a = .2$, $\sin b = .7$, and $\sin c = .3$; which ordering below is right?</p> <p>a) $b < a < c$ b) $c < a < b$ c) $a < c < b$ d) $c < b < a$ d) $c < b < a$ e) $b < c < a$</p>
5 th question (taken from Guntekin (2010))	<p>If $\pi < x < 3\pi/2$ and $\tan x = 5/12$, then what is $\sin x - \cos x$?</p> <p>a) $7/16$ b) $7/15$ c) $1/2$ d) $7/13$ e) $7/12$</p>
6 th question (taken from Tekin (2010))	<p>An airplane is taking off from an airport at 300km/h speed and 20° angle with ground plane. Calculate the height of the plane from the ground after 30 minutes of departure (take $\sin 20^\circ$ as $.3$).</p>
7 th question (prepared by the authors)	<p>Find the Q angle in the triangle below by a protractor, and calculate the b length if c is 10 unit.</p> 

We will provide information on some of the questions in the test. In the 1st question, it was examined whether and how students can use their knowledge of undefined terms, unit circle, and/or graphics. In the 2nd question, the aim was to examine students' abilities to use multiple representations as the question could be solved algebraically, geometrically, and/or graphically. In the 3rd question, the aim was to examine students' understanding of signs of trigonometric functions. In the 5th question, the aim was to determine whether students correctly use relations while finding ratios of other trigonometric ratios when one of the trigonometric ratios of an angle is given, and to understand whether they have difficulties using right triangle. In the 7th question, the aim was to examine students' protractor use as well as to understand whether they can use their knowledge on trigonometric functions to calculate a length.

Data analysis

To analyze prospective teachers' answers to the test questions, their answers were first coded as 1 if true, 0 if wrong, 2 if half true, and 3 if unanswered. Then, in order to analyze their knowledge of trigonometry and angle measurement through comparing their pre and post test scores, Wilcoxon Signed Rank Test for paired samples was used as the data did not show normal distribution. Additionally, in order to identify prospective science teachers' difficulties in trigonometry, related frequencies were calculated.

Results

To compare prospective teachers' pre and post test scores, Wilcoxon Signed Ranks test was conducted. In Table 2, z value and significance level for pre- and post-tests are provided below.

Table 2. Wilcoxon Signed Ranks test results

Test Statistics ^c								
	Totalpost - Totalscore pre	Q1post – Q1pre	Q2post – Q2pre	Q3post – Q3pre	Q4post – Q4pre	Q5post – Q5pre	Q6post – Q6pre	Q7post – Q7pre
Z	-1.289 ^a	-1.821 ^a	-1.769 ^b	-1.265 ^b	-.258 ^b	-.832 ^a	-1.148 ^a	-3.202 ^a
Asymp. Sig. (2- tailed)	.197	.069	.077	.206	.796	.405	.251	.001
a. Based on negative ranks. b. Based on positive ranks. c. Wilcoxon Signed Ranks Test								

According to Table 2, there was no significant change in the scores on the knowledge test from pre-test to post-test at the .05 significance level ($z=1.29$, $p=0.2$).

On the other hand, Wilcoxon test per each question revealed that in the seventh question, where prospective teachers were asked to measure an angle and make calculations requiring trigonometry knowledge, there was a significant improvement in the mean scores from pre-test to post-test. In the first question where they were asked to explain why $\tan 90^\circ$ was undefined, there was also an improvement in the mean scores although not significant.

Additionally, when frequency analysis was examined, the percentages of the correct answers indicated that prospective teachers had difficulties especially with the second, fifth, and sixth questions where they were asked to compare trigonometric functions or determine the signs of the functions in a given angle range, and solve a real-life problem requiring knowledge of trigonometric functions. To give an example, in the second question, where prospective teachers were asked to order $\sin x$ and $\cos x$ functions when x is between 0 and $\pi/6$, it was seen that only 3 participants could correctly answer the question. When the participants' answers were examined, it was seen that most of the participants thought that in the first quarter of the coordinate system, \sin function gets higher as the value gets bigger.

Table 3. Frequencies and percentages in the post-test

Questions	Correct(1)	Wrong (0)	Half-correct (2)	Unanswered (3)
1 st	36 (78%)	2 (4%)	3 (7%)	5 (11%)
2 nd	3 (7%)	30 (65%)	7 (15%)	6 (13%)
3 rd	34 (74%)	12 (26%)	-	-
4 th	29 (63%)	16 (35%)	-	1 (2%)
5 th	6 (13%)	9 (20%)	24 (52%)	7 (15%)
6 th	3 (7%)	5 (11%)	13 (28%)	25 (54%)

7 th	20 (44%)	1 (2%)	21 (46%)	4 (9%)
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Discussion and conclusion

In this study, the aim was to analyze prospective science teachers' knowledge of trigonometry and angle measurement before and after instruction, and to identify their difficulties regarding trigonometry concept. The findings indicated that although prospective teachers took classes covering trigonometry and angle measurement concepts (such as mechanic course), and moreover they received a special instruction during this study, they still had major difficulties in solving trigonometry problems and measuring angles. As stated before, being a prerequisite for physics, trigonometry is one of the challenging courses for students (Gur, 2009). Both teachers and students have difficulty with reasoning about trigonometry (Thompson, Carlson, & Silverman, 2007). Research suggests that when courses do not focus on conceptual understanding, but rather rely mostly on procedural knowledge, they do not help students grasp the concept effectively and in a long term (Gur, 2009; Weber, 2005). In the present study, although the participating prospective teachers received instruction on trigonometry through practicing the topic in a physics concept rather than receiving instruction through abstract examples, their performance in both pre- and post- tests was rather lower than expected. Moreover, there was no significant change in their scores on the knowledge test from pre-test to post-test. Results revealed that only in the question (7th question) where they were asked to measure an angle and make calculations requiring trigonometry knowledge, there was a significant improvement in their mean scores. In the remaining questions, their performance was not improved even after instruction. Similarly, in Gur's (2009) study, it was concluded that students had difficulty understanding trigonometric functions, being parallel to the findings of the present study. These findings suggest that prospective teachers have major difficulties with conceptually understanding trigonometry even they experience application of the concept in physics and/or connecting it to real life through problem solving.

To provide specific explanations on participants' answers, in the first question where they were asked to explain why $\tan 90^\circ$ was undefined, there was an improvement in prospective teachers' mean scores, although not significant. In the post-test, the majority of the participants (78%) were able to correctly explain why the given degree was undefined. Similarly, Tas (2013) found that students' levels in this question were high. He suggested that this might either indicate that students' conceptual learning on this function was good or as the question was at a basic level, their high performance was based on memorization. He further added that students' explanations in the first question were at the surface level. In the present study also, when the participants' answers were examined, it was seen that they were able to explain their answers in the surface level. As research suggests, they either used the algebraic approach or geometric approach through explaining that a number's division with zero is undefined or parallel lines intersect in infinity, without any further explanation (Tas, 2013).

To provide another example, in the third question where the participants were asked to order the signs of the trigonometric functions, it was found that most of the participants could correctly answer the question (74%). Similarly, in Guntekin's (2010) study, it was found that the majority of the students (97%) were able to order the functions correctly. It was suggested

that the remaining students might have given incorrect answers to the question because of excitement and/or lack of attention.

In the fifth question where the participants were asked to calculate $\sin x - \cos x$ if $\pi < x < 3\pi/2$ and $\tan x = 5/12$, participants had difficulty answering the question correctly (13% correct, 52% half-correct, 15% unanswered, 20% incorrect). On the other hand, in Guntekin's (2010) study, it was found that most of the students could correctly answer the question (83%). The reason for this difference can be explained with the coding. In the present study,

when the participants chose the correct choice among the options, but incorrectly determine the sign, their score was coded as half-correct. In Guntekin (2010), the answers were coded as correct, wrong, or unanswered. From here, we can suggest that participants were mostly able to use the right triangle and calculate the ratios correctly as in Guntekin's study, but also they had difficulty in determining the signs of the functions in the third quarter of the coordinate system.

Blended in their trigonometric understanding, prospective teachers' angle measurement performance was also weak. As stated before, angle measurement is among the topics in high school curriculum which is another prerequisite for physics (Moore, 2013), and it is inseparable from trigonometry. As research suggested (Crompton, 2013), in the present study, we also came up with the finding that prospective teachers had difficulty with understanding the angle measurement concept. At this point, it is believed that their fragile understanding of angle measure also negatively affected their understanding of trigonometric functions and/or vice versa.

To sum up, the findings suggested that prospective teachers have fragile understanding of trigonometric concepts as well as angle measurement. Research also points that teachers and/or students have difficulty with these concepts (Aydın, 2007; Guntekin, 2010; Tas, 2013). At this point, Dogan and Senay (2000) concluded in their study with high school teachers that most of the teachers thought that trigonometry was abstract, and students had difficulty in learning trigonometry as they had weak understanding of unit circle and basic geometrical concepts. They also stated that students had difficulty with using the equipment while learning trigonometry, and thus it is important to include them in learning through activities. At the end of the present study, it is also suggested that both prospective teachers and students should be provided with opportunities to use related equipment while learning trigonometry and angle measurement.

For future studies, it is recommended that through qualitative approach, it might be examined why prospective teachers have such difficulties with trigonometry and angle measurement, in order to diminish their difficulties with these concepts and to increase their success in trigonometry and angle measurement concepts.

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