



!"#\$%&'()*+,-./0&*1+.234*1+3(+..2(+3*

5.26*7**8987*

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SOLA 4951/SOLA9451

RESEARCH THESIS A

"#\$%&! ' (#\$&#!) *#\$+, -!.....Y
 0 ' (#\$&#!) *#\$+, -!\$()!& ' (-1, #\$\$# ' (!# 2 * -!% ' 3!& ' 13- *!& ' (4* (' 3!.....Y
 0 ' (#\$&#!) *#\$+, -!\$()!& ' (-1, #\$\$# ' (!# 2 * -!% ' 3!\$)) #+' (\$, !, * *3-5) * 2 ' (-#3\$# ' 3-5, \$6! -#\$%!!.....Y
 728 '3#\$(#!, + (9-!.....Y
 0 ' 13- *!) *#\$+, -!.....Y
 03*)#!8 ' + (#-!.....Y
 0 ' (#\$&#!: ' 13-!.....;.
 " 1 2 2 \$3<!\$()! =+2 -! ' %!# : *!& ' 13- *!.....;.
 "#1) * (#!, * \$3(+(>! ' 1#& ' 2 * -!.....;.
 ?@!AB ' (-C!\$()!DE!D3 '>3\$2!F*\$3(+(>!G1#& ' 2 * -!.....;.
 0 ' 13- *!F*\$3(+(>!G1#& ' 2 * -!A2\$88*)#!?!?@!D3 '>3\$2!\$()!DE!F*\$3(+(>!G1#& ' 2 * -!6* , ' HC!!
 J*\$& :+(>!-#3\$#* >+* -!.....||
 0 ' 13- *!- & : *) 1, *!.....K
 =- * - - 2 * (#!.....L
 =- * - - 2 * (#! ' 4*34+*H!.....L
 J : * -+ -! =!A " GF= I MKN5 " GF=MIKNC! =- * - - 2 * (#!.....D
 D3* - * (#\$# ' (!.....M
 " 162+ - - + ' (!.....M
 P\$39(+>!.....NQ
 @R\$2+(\$# ' (-!.....NQ
 " 8* & \$, !& ' (-) *3\$# ' (!\$()! -188, * 2 * (#\$3<!\$ - - * - - 2 * (#!.....NQ
 J : * -+ -! S #:)3\$H\$, T! " 1-8* (-+ ' (T!\$()!J+2 *!@R#* (-+ ' (!U!.....NQ
 @R8* &#*)!3* - ' 13& * -!% ' 3! - #1) * (#-!.....NN
 0 ' 13- *! *4\$, 1\$# ' (!\$()!) *4* , ' 82 * (#!.....N/
 D3+V* -!.....N/
 B*\$, #: !\$()! " \$% * #<!.....N/
 =&\$) * 2+&! : ' (* -#<!\$()!8, \$>+\$3+ - 2!.....N;
 =) 2+(+ -#3\$#4* !2 \$##*3-!\$()!, + (9-!.....N;
 =88* ()+R! =!!!@ (>+ (* *3-! =1 -#3\$, +\$!A@ =C!O ' 28*#* (&+ * -!.....NK
 !



J: *3*! \$3*! ('!%'32\$,!, *#13* -!'3! #: +!&'13- *.! "#1) * (#-! - : '1,)! -#\$<! +(!&' (#\$&#! H#: ! #: *+3!
('2+(\$#*)! -18*34+ -'3!#: 3'1>: '1#!#: *!#: 3**!#: * -+!#*32 -T!8*3: \$8-!\$#!\$!83*`'3>\$ (+- *)!H**9,<!
2**#+(>!#2 * .!7#!+!4*3<!+28'3#\$ (#!+(!#: *!*\$3,<!-\$>* -!'%<'13!83'd* &#!#!'!6*!+(!&' (#\$&#!H#: !<'13!
-18*34+ -'3!#!* (-13*!#: \$#!<'1!: \$4*!\$!&, *\$3!1 () *3-\$()+(>!%#: *!# '8+T!H: \$#!+!3*_1+3*)T!\$()!#!'
& * &9!#: \$#!H: \$#!<'1!\$3*!)'+(>!+!\$)3* --+(>!#: *!\$+2 -!'%#: *!83'd* &#.!7%!\$!-#1) * (#!H'1,)!,+9*!#!'
&' (#\$&#!#: *+3! -18*34+ -'3! '1#-+) *!'%!\$!83*`'3>\$ (+- *)!H**9,< 2**#+(>T! * 2\$+,!+-!#: *!83*%*33*)!
2*#: ')!%&' (#\$&#!

J: *!J: * -+!D3'd* &#!+-!&\$33+*)!'1#!+(!#: *!,\$-#!#: 3**!#*32 -!'%!: *!-#1) * (#-!



K.! Z('H,*>*'!'*(>(*3+(>!)*)->(!83\$&#&*!\$())!&'(#*R#1\$,!%\$&# '3-!+28\$&#(>!#: *!
*(>(*3+(>!)+-&+8,+(*.!
L.! b()*3-#\$(+(>!'!#:#*!-&'8*T!83+(&+8,*-T!('32 -T!\$&&'1(#\$6+,#*-\$!)!6'1()-!'!
-1-#\$(,\$6,*!*(>(*3+(>!83\$&#&*!+(!#:#*!-8*&+!&!)+-&+8,+(*.!
O.! =88,+&\$#+'(!'!*-#&6,+:-:*)!*(>(*3+(>!2*#:')-!#!'!&'28,*R!*(>(*3+(>!83'6,*2!
-',4+(>.!
g.! ^,1*(#!\$88,+&\$#+'(!'!*(>(*3+(>!*&:(+_1*-T!#',-!\$!)!3*- '13&*-.!
M.! =88,+&\$#+'(!'!-<-*2\$#&!*(>(*3+(>!-<(#:#-+!\$())!)*->(!83'&*--*-.!
NQ.! =88,+&\$#+'(!'!-<-*2\$#&!\$883'\$&:*-!#!'!&'()1&#!\$())!2\$(\$>*2*(#!'!*(>(*3+(>!
83'0*&#-!.!
NN.!@#:+&\$,!&'()1&#!\$())!83'!*--+'(\$,!\$&&'1(#\$6+,#<.!
N/!@%**!'3\$,!\$())!H3+##*(!&'221(+&\$#+'(!(!83'!*--+'(\$,!\$()),\$<!)'2\$+(-.!
N;!.!03*\$#4*T!+(('4\$#4*!\$())!83'\$*!) *2*\$('13.!
NI!.!D3'!*--+'(\$,!1-*!\$())!2\$(\$>*2*(#!'!*+('%32\$#+'(!.
NK!.!G3)*3,<!2\$(\$>*2*(#!'!*-*,%T!\$())!83'!*--+'(\$,!&'()1&#.!
NL!.!@%**!#*\$2!2*26*3-:+8!\$())!#*\$2!,*\$)*3-:+8.!

J:+-!&'13-*!+-!) *->(*)!#!\$)3*--!#:#*,\$3(+(>'1#&'2*-!6*,'H!\$())!#:#*!&'33*-8'()(>!
@(>(*3-!=1-#3\$,+\$! "#\$>*!N!0'28*##(&<!"#\$(\$3)-!%'3!D3'!*--+'(\$,!@(>(*3-!\$-!-:'H(!.
J:*!%1,,!+,+#!'!"#\$>*!N!0'28*##(&<!"#\$(\$3)-!2\$<16*!'1()!+(!=88*())+R! =.!
!
=#*3!-1&&*--%1,,<!&'28,*#(>!#:+-!&'13-*T!<'1!-:'1,)!6*!\$6,*!# 'W!

=#:#:*!&'(&,1-+'(!'!#:#:+-!&'13-*T!-#1)*(-!-:'1,)!6*!\$6,*!# 'W!
N.! Y*4*,'8!\$!) *->(!'3!\$!83'&*--!'3!+(4*-#>\$*!\$!<8'#:#*--!%' ,,'H+(>!)1-#3<!\$())!
83'!*--+'(\$,!*(>(*3+(>!--\$(\$3)-!AOT!gT!MT!NQC!
/!.! 03#&\$,,<13*%,*&#!'(!\$!-8*&\$,+-#!6')<'!%19('H,*>*!3*,\$#*)!#!#:#*+3!#:#*--!# '8+&.!A;C!
;.! =88,<!-&+*(#%+&!\$())!*(>(*3+(>!2*#:')-!#!'!-,4*!\$(!*(>(*3+(>!83'6,*2.!AOC



6*!&' 28,*#*)!\$()!-162+##*)!#!P*3,+() *!Z\$<!()!18,'\$)*)!#!#: *!" GF=! IMKN5MIKN!



A

7#!+-!+(#* () *)!# : \$#!J : * -+!=!& ' 4*3!# : *!-& ' 8+(>T!8,\$ ((+(>T!\$()!& ' 2 8, *#+(>!
83*8\$3\$#+' (-!%' 3!# : *!83' d* &#.!
N.! D3' d* &#!D,\$ (! i !# : +-!H+,!& ' 2 83+- *!\$!N` /!8\$> *!) ' &1 2 * (#!*R8,\$+(+(>!# : *!d1-#%+&\$#+' (!%' 3!
: *+3!83' d* &#T!\$!3' 1>:!, \$<' 1#!' %!\$!8,\$ (!' %!H' 39!# : 3' 1>: ' 1#!# : *!83' d* &#T!+(&,1)+(>!\$(<!



	/.! " * 2+(\$3! D3* - *(\$#+' (! ;.! D3'>3*--!a*8'3#! !	O! ! NQ!	NQ j ! ! K j !	" 18*34+- ' 35=--* -- ' 3!AKQ5KQC! ! " 18*34+- ' 3!
J: * --!0!	N! ^+(\$,!a*8'3#! /.! D\$3#&+8\$#+' (! ;.! D3* - *(\$#+' (! '%!H' 39			



! If there is a significant difference between the male and female and the age



?*, 'H!\$3*!# :+(>-!#'!&' (-+) *3!H: * (!81##+(>!# '> *#: *3!#: *!,#*3\$#13*!\$(!)83'>3* --!3*4*H!
)&'12*(#!

<p>F#*3\$#13*!a*4*H! !</p>	<p>(W a , a a ?) ! ?3+*%!6\$&9>3'1(!)#!'!83'd*&#! ! "122\$3<! '%!,#*3\$#13*!3*,*4\$(!# ' !83'd*&#! ! 7)*(#%+&\$#+' (! '%!>\$8-m!+(!#: *!,#*3\$#13*! ! D3'6,*2! "#\$*2*(#!A+(%'32*)!6<!>\$8-!+(!#: *!, ,#*3\$#13*C! ! B<8'#: * -+-\$(!) \$+2-!</p>	<p>KQ j!</p>	<p>N/'NK!</p>
<p>D3'd*&#!D,\$(! D3'd*&#! Y*8*()*(#! D3*8\$3\$#+'(-!</p>	<p>AH a a a a ?) ! ! D3'8'-'*)!"',1#'(5@R8*3+2*(#\$,!P*#:')', '><! ! J: * -+!#2*,+(*!i!%'3!(*R#!#H' !#*32-! o! n1-#%+&\$#+' (! '%!#2*!\$, '&\$#+' (!%'3!*\$&:! #\$-9! ! =4\$,\$6,*!3*-'13&*-'!+)*(#%+*)! ! a*_1+3*)!#3\$+((>!)!18-9+,(>!)*(#%+*)!</p>	<p>/Q j!</p>	<p>;`K!</p>

(Ca a a a ?) W a a a a ?)

D3'd*&#!-8*&%+&T!61#!2\$<!(&,1)*!
! @4+)*(&*!'!#3\$+((>!)'(!-8*&%+&!*_1+82*(#!
! @4+)*(&*!'!-'2*!18-9+,(>!)!(*H!
- '%#H\$3*52*#:)-!
! D3*,+2+(\$3<!3*-1,#-!
! D3*,+2+(\$3<!-9*#&: * -!
! 0'28'(*(#-58\$3#-!'3)*3*)!



J: *!,\$#*!8* (\$,#<!+\$88,+*)!8*3!&\$,* ()\$3!)\$<!A+ (&,1)+(>!H**9* ()-\$ ()!816,+&! : ',+)\$<-C!#:\$#!
#: *!\$--*--2* (#!+!'4*3)1*!J: *3*!+!('!'83' `3\$#\$!'!# : *!,\$#*!8* (\$,#<!% '3!-162+--+ ' (-!2\$) *!
8\$3#!H\$<!# : 3' 1>: !\$!)\$<.!
!

Ma

P\$39+(>!>1+) * ,+ (* -!% '3!\$--> (2* (#!-162+--+ ' (-!H+,,!6*!83'4+) *)!\$#!# : *!-\$2*!#2*!\$-!
\$--> (2* (#!) *\$#,-!# '\$--+-#H# : !2**#(>!\$--*--\$6,*!3*_1+3*2* (#-!"162+--+ ' (-!H+,,!6*!
2\$39*)!\$&&'3)+(>!#!'# : *!2\$39+(>!>1+) * ,+ (* -!83'4+) *)!.

J: *3*!+-('!*R\$2!% '3!# : +-!&'13- * .!

7%<'1!:\$4*!R8*3+ (&*)!\$(!+,, (*--!'3!2+-)\$4* (#13*!6* <' ()!<'13!&' (#3',!#:\$#!H+,,!+ (#3%*3*!H# : !
<'13!\$--*--2* (#!8*3%'32\$(&*T!<'1!\$3*! *,+>6,*!#!'\$88,<!% '3! "8*&\$,!0' (-+)*3\$#+' (!83+'3!#'
-162+##(>!\$(!\$--*--2* (#! '3!+##+(>!\$(!*R\$2.!!
!

!#:\$#!bX" S!('H!:\$-!\$!^+#!#'" +#!5!"162+#!31,*T!H : +&: !2*\$(-!#:\$#!+!<'1!-#!\$(!*R\$2!
'3!-162+#!\$!8*+*!'!%\$--*--2* (#T!<'1!\$3*!) * &,\$3+(>!<'13- *,%1%#! * ('1>: !#') '!-\$ ()!&\$ (('#!
, \$*3!\$88,<!% '3! "8*&\$,!0' (-+)*3\$#+' (.

^'3!) *\$#,-! '%! \$88,<+(>! %'3! "8*&\$,!0' (-+)*3\$#+' (! \$ ()! &' ()#+' (-! %'3! # : *! \$H\$3)! '%!
-188,*2* (#\$3<!\$--*--2* (#T!8,*\$- *!- **!# : *!+(% '32\$#+' (!' (!bX" Sf-! "8*&\$,!0' (-+)*3\$#+' (!
8\$>*.!

E

a*_1* -#-!% '3!# : *--!H# :)3\$H\$,T!-1-8* (-+' (!'3! *R#* (-+' (!- : '1,)!6*!2\$) *!+(!H3+##(>!#!'# : *!
J: *--!0' '3)+(\$# '3.!J: *!%,', 'H+(>!83' &*)13* -!\$ ()!31,* -!H+,,!6*!\$88,+*)!H: * (!\$!-#1) * (#!H+ : * -!
#!'H# :)3\$H! '3' 2T! '3!-1-8* ()! "GF=IMKN5" GF=M!KN.! J: *-*!31,* -!-188,*2* (#!# : *!bX" S!
) *\$),+ (* -T!&' ()#+' (-T!\$ ()!83' &*)13* -!% '3!H# :)3\$H+(>!%3' 2!\$!&'13- * .!!!
DF@=" @!XGJ@W! !

N.! 7(!*4*3<!&\$-*!H: *3*!\$!-#1) * (#!H+ : *-!#!'8' -#8' (*!&'28,*#+' (!'!# : *!# : *--T!+.*!#!'
-1-8* ()!H'39!\$ ()!&'28,*#*!# : *!# : *--!+(!\$!,\$#*3! - *--+' (T! H3+##* (!\$883'4\$,'!#!# : *!
-18*34+- '3!21-#!%3-#!6*!'6#\$+ ()!6*%'3*!-162+##(>!\$!H3+##* (!3*_1* -#!#!'# : *!J: *--!0' `'
'3)+(\$# '3!)

J: *!-18*34+- '3!2\$<13*%1- *!\$883'4\$,% '3!\$!4\$3+*#<! '%!3*\$- ' (-T!*>.!#:\$#!# : *! (*&*--\$3<!



/.! =!-#1) * (#!H: '!+-!8*32+##*)!#!H#:)3\$H!H#: '1!%\$,13*!%3' 2!-16d*&#! "GF=IMKN5MIKN!
-: '1,)!3*`* (3',!+(!#: *!%' ,,'H+(>!- *--+ '(!H#: !\$! J: *--+!X' 2+(\$#+' (!^'32.!X'#!#: \$#!
1() *3! ('32\$,! &+3&12-#\$(&* -!) +-&' (#(1\$#+' (!H#: '1#!%\$,13*!'3!%+(\$(&+,\$! 8* (\$,#<! +-!
8'--+6,*!' (<!18!#!#: *!0* (-1-!Y\$#*!.!

!

;.! S: * (!\$!-#1) * (#!+-!>3\$ (#*)!\$ (!*R#* (-+' (!#: *3*!2\$<16*!\$!8* (\$,#<13* -1,#+(>!(!\$!3*)1&#+' (!
'#!#: *!#: *--+! 2\$39.!J: +-!H+,!6*!+28' -*)!\$&&'3)+(>!#!!31,*-!\$883'4*)!6<!#: *!J: *--+!



'#: *3H+ - *! '6#\$+ (! \$! a+-9! =-- * -- 2 * (#! % ' 3! \$883' 4\$,! 6<! #: *+3! -18*34+- '3! \$()! 6<! #: *! " 8\$&*!
P\$(\$>*3!+(!H: ' - *!-8\$&*!#: *!H'39!+-!# '!6*!) ' (*.!
!

a+-9! =-- * -- 2 * (#!#* 28,\$#* -!% ' 3! "D=0@ "T!@ sb7DP@XJ!\$()!DaG0@Yba@ " ! \$3*!\$4\$+, \$6, *!' (!
#: *! 2 ' '), *! -+*!.! a+-9! =-- * -- 2 * (#-! \$()! *R\$28, * -! \$3*! \$,3*\$) <! \$4\$+, \$6, *T! #: 3' 1>: ! < ' 13!
-18*34+- '3!% ' 3! 2\$(<!\$+#+* -.!0 ' 28, **)! '3!2 ')+#+*)!4*3-+' (-!- : ' 1,)!6*!-162+##*)!\$-!-> (*)!
:\$3)!& '8+* -!\$()!P " !S '3)!*, * ' (+!4*3-+' (-!# ' !Z+\$(!^' (>!0 :+(!A9%.& :+([1(-H.*)1.\$1C.!

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bX" S! :\$-!\$(!' (>' +(>!&' 2 2+#2 * (#!# ' !% ' -#*3+(>!\$!&1,#13*! ' %!, *\$3(+>!+(% ' 32 *)!6<!\$&\$) * 2+&!
+(#*>3+#+<.! =, ,! bX" S! -#1) * (#-! :\$4*!\$!



